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RESPIRATORY EXPERIMENTS ON MAN

YANDELL HENDERSON, PH.D.
NEW HAVEN, CONN.

The recent remarkable advances in the physiology of respiration have been largely based on observations made on man.[1] This fact, coupled with their simplicity and ease of performance, fits these experiments to fill a widely felt pedagogic need. In the training of medical students heretofore, experiments on animals under more or less unnatural conditions have predominated. On man, who is properly the chief interest of the future physician, relatively little has been attempted. Indeed, it is not the least of the contributions which recent advances in the field of respiration have made that they have shown that, given the ingenuity to devise proper experiments, man himself, the normal healthy subject as well as the patient exhibiting functional disturbances, becomes a more profitable *Versuchstier* than dog, rabbit or frog.

The development of the art of conceiving experiments suitable for performance on man, and a more general recognition of the fact that such experiments are possible, free from danger and peculiarly instructive, would go far toward effecting the long-needed but heretofore difficult cooperation of physiology and internal medicine. Respiration is a field peculiarly suited to such cooperation. It is already evident that the vogue in internal medicine, which the introduction of the sphygmomanometer and the methods for determining arhythmia have given to circulatory problems during the past few years, will be exceeded during the period now beginning by interest in the application of physiologic methods to the clinical problems of respiration. Clinicians are beginning to realize that the alveolar carbon dioxid is a normal constant at least equal in clinical importance to arterial pressure. In fact, the variations of the former are probably of greater significance in disease than are those of the latter function. The method for determining the alveolar carbon dioxid is almost as easy and as readily applicable to clinical conditions as is the measurement of arterial pressure.

Up to the present time, however, respiratory experiments on man have been introduced into physiologic laboratory courses in very few medical schools, and into even fewer laboratory manuals. To meet this lack the experiments described below will, it is hoped, be found useful. They are susceptible of almost unlimited modification and extension. They are drawn from the work of many investigators. Their present interpretation as applied to the normal control of respiration is mainly due to Haldane and his collaborators. On the abnormal side I have particularly attempted to emphasize their significance for respiratory failure under anesthesia and for a form of shock. Recent observations by a number of investigators both in laboratory and clinic suggest that the greatest value of the theory of respiration which they support will probably be found in the new point of view which it affords for attack on the difficult problems of acidosis. In cardiorenal and in diabetic cases, as well as in normal persons at great altitudes, the alveolar carbon dioxid is an index of the degree of acidosis.

1. For a review of the entire literature see C. Gordon Douglas: Ergebn. d. Physiol., 1914, xiv, 338.

I. FORCED BREATHING

1. *Forced Breathing and Apnea Vera.*—The subject, seated or lying down, breathes as deeply as possible about eighteen times a minute. Attention should be fixed on drawing deep inspirations. After from twenty to forty seconds the effort is discontinued, and the subject allows his respiration to act involuntarily. In typical cases, for a period varying from ten to thirty seconds thereafter, the subject either stops breathing altogether or breathes in a very shallow and ineffective manner. The carbon dioxid content of the blood having been decreased (acapnia), the respiratory center ceases to act until it reaccumulates up to the normal stimulating amount or "threshold value." In a large class of students one finds marked individual differences in the results of this experiment, some giving a perfect apnea, others merely a shallow or irregular respiration. Numbness and tingling in the hands and feet usually occur also. The principal difficulty is to keep the subject from breathing too fast and making such vigorous exertions, particularly in expiration, that the increase in carbon dioxid production is considerable and the increased elimination (the whole object of the experiment) only slight. Under these conditions of course no apnea occurs.

2. *Prolonged Forced Breathing Followed by Cheyne-Stokes Respiration.*—If the forced breathing is continued for two or three minutes or longer, and apnea vera then allowed to occur, many subjects toward the end of the period of apnea experience an oxygen want. The lips turn slightly blue. This oxygen lack may initiate Cheyne-Stokes breathing lasting sometimes for several minutes. Prolonged forced breathing induces "light-headedness," polyuria, shivering, muscular weakness and other functional disturbances.

3. *Forced Breathing without Excessive Elimination of Carbon Dioxid.*—A large paper bag (obtained from a grocery store) is held over the nose and mouth while the subject does forced breathing. The peculiar and disagreeable sensations of acapnia do not occur, as excessive loss of carbon dioxid is prevented by the

rebreathing. The voluntary effort is found to be much less than in the previous experiments. If the bag has been so closely applied to the face that the same air has been breathed again and again, the subject subsequently experiences no apnea, and may even be unable to stop breathing if he tries. This experiment shows that the apnea in 1 and 2 was due to alteration in the blood gases (mainly decrease of carbon dioxid), and not to a nervous reflex set up by the distention and collapse of the lungs during the forced breathing. It was not apnea vagi.

For this and similar experiments the only recording apparatus necessary consists of a pneumograph fastened around the body and connected by means of a small rubber tube with a tambour writing on a smoked drum. An easily constructed form of pneumograph consists of a coil of spring wire from 16 to 20 cm. long, 2 cm. in diameter, covered with thin-walled rubber tubing, and fastened around the body with a small chain. For teaching purposes it is best to require students to get graphic records of everything possible. The record fixes their attention and they learn incidentally.

II. EXPERIMENTS ON HOLDING THE BREATH AS LONG AS POSSIBLE

1. The subject holds his breath after a moderate inspiration until the breaking-point is reached. This usually occurs after about forty seconds.

2. The breath is held after a very deep inspiration. Fifty seconds or a minute may elapse before the breaking-point is reached.

3. The subject performs forced breathing for a couple of minutes. The breath can then be held for two or three minutes.

4. The subject draws two or three deep breaths of oxygen from a bag. In some subjects the breath can then be held no longer than merely with air. In others it may be held a few seconds more.

5. The subject performs forced breathing for as long a time as in 3. He then draws two or three deep breaths of oxygen, and holds his breath with the lungs full of oxygen. It can be held much longer than in 3. The record (Vernon) for this experiment (after six minutes of forced breathing and with the lungs full of oxygen) is eight minutes and thirteen seconds.

These five parallel experiments show that the imperative demand to breathe (in 1 and 2) is chiefly due to accumulation of carbon dioxid and not to any great extent to lack of oxygen (compare 4); but that in a prolonged period of apnea vera and voluntary apnea a lack of oxygen occurs and reinforces the stimulus of carbon dioxid.

III. EXPERIMENTS ON REBREATHING

1. *The Immediate Effects of Total Rebreathing (Due Chiefly to Excess Carbon Dioxid).*—The nostrils are compressed with a nose-clip and the subject breathes from and into a rubber bag containing 20 to 40 liters of air. The amplitude of respiration is soon augmented, and in the course of a few minutes the subject is panting heavily forty times a minute. He usually develops a typical carbon dioxid headache, but this wears off in fifteen or twenty minutes after the experiment is ended.

2. *The Effects of Insufficient Oxygen without Excess of Carbon Dioxid.*—The bag is refilled with fresh air and the experiment performed again, but with this difference that a vessel of 1 or 2 liters capacity filled with soda-lime or broken sticks of sodium hydrate is placed between the bag and the subject's mouth so that he breathes through it into and from the bag. The carbon dioxid exhaled by the subject is thus absorbed, and he gradually consumes the oxygen in the bag. As a rule there is no noticeable deepening or quickening of the breathing, and the subject will first become cyanosed and then unconscious without appreciable augmentation of breathing. This experiment should *always be carefully supervised,* as it is not free from danger. If continued for more than ten minutes it is usually followed by a severe frontal headache, developing slowly for several hours thereafter, together with other ill effects, and lasting from twenty-four to forty-eight hours.

3. *Cheyne-Stokes Breathing from Partial and Intermittent Lack of Oxygen.*—In place of the bag a tube or pipe from 3 to 5 cm. in diameter and from 80 to 150 cm. in length is attached to the soda-lime tin. After breathing through this device for a few minutes marked Cheyne-Stokes breathing usually results. The carbon dioxid exhaled by the subject is absorbed by the soda-lime close to his mouth, and the long dead space of the tube beyond produces a deprivation of oxygen. This deprivation induces a few deeper breaths. The subject thus gets more fresh air from the tube; the lack of oxygen is temporarily relieved; and apnea results because of the loss of carbon dioxid during the preceding deep breaths. Thus alternating periods of apnea and hyperpnea develop.

The vessel to hold soda-lime or sodium hydrate is conveniently made of a large tin can with a well-fitting top made air-tight with tire tape or plasticine. Into the top and bottom short pieces of metal tubing 2 cm. in diameter are soldered. Inside each end of the can is placed a slightly concave disk of wire gauze. Soda-lime must be granular and quite moist to act well. That on the market is much too dry and must be moistened. Soda-lime is easily made of slaked lime and sodium hydroxid solution mixed in an iron pot.

IV. EFFECTS OF CARBON DIOXID AND OXYGEN, RESPECTIVELY

1. *Carbon Dioxid as a Respiratory Stimulant.*—The bag is filled with fresh air to which from 2 to 4 per cent. of carbon dioxid gas has been added. Breathing this mixture induces immediately a considerable increase in the volume of breathing.

2. *Oxygen under Normal Conditions Neither a Stimulant Nor a Depressant.*—The bag is filled with pure oxygen gas, which the subject breathes through soda-lime. Neither increase nor decrease in the rate or volume of breathing is induced. This experiment is very conveniently performed with the so-called Hill's bag, in which oxygen is generated by the addition of water to sodium peroxid, for when the bag is merely shaken the sodium hydrate solution which remains absorbs the carbon dioxid. If a spirometer is used (as in VI) it is easily shown that the consumption is no greater from pure oxygen than from air.

V. REFLEX INHIBITION OF THE RESPIRATORY CENTER BY DISTENTION OF THE LUNGS

A spirometer is loaded so that the air within it is under a pressure of 8 to 10 cm. water gauge. This is connected either to a large T-tube or a large three-way tap. The spirometer is filled with fresh air, the connecting tube clamped, and the nose compressed.

During a preliminary period the subject breathes through the tap or T-tube to the outside air. At the end of an expiration the outside air is suddenly shut off and the connection to the spirometer opened. Under the stimulus of pulmonary distention the breathing becomes markedly slower and deeper. After eight or ten seconds the connection to the spirometer is shut off and that to the outside opened. Normal breathing almost immediately returns.

This experiment was first performed by Miss Johanne Christiansen working with Dr. J. S. Haldane. The inhibitory influence on respiration which it shows occurs to some extent under the so-called positive and negative pressure conditions for spontaneous breathing after the opening of the thorax, and also under intratracheal insufflation. It is one of the principal advantages of insufflation that it thus tends to prevent the development of acapnia by inhibiting spontaneous breathing, the jet of air supplying ample oxygen, but not washing out carbon dioxid to an equal extent.

VI. THE OXYGEN CONSUMPTION DURING REST AND WORK

The subject breathes from and again into a spirometer, exactly counterbalanced so as to move as easily as possible, through soda-lime or sodium hydroxid. As the oxygen is consumed, the spirometer sinks and this is easily recorded on a smoked drum. The spirometer is raised at intervals by running oxygen into it from a tank or generator of this gas. The consumption of oxygen by the subject is recorded first at rest, and then during exercise with the arms or legs. The student should then graduate the spirometer and the graphic records so as to determine the oxygen consumption in cubic centimeters per minute, by pouring measured volumes of water into a bottle from which the air is thus displaced into the spirometer. During rest the consumption may be less than 300 c.c. per minute, and during exercise on a stationary bicycle more than 3,000 c.c. per minute.

VII. ARTIFICIAL RESPIRATION

Both the Schäfer[2] and Sylvester methods of artificial respiration are tested by placing a clip on the subject's nose and a tube in his mouth. The tube is attached to a well counterpoised gasometer arranged to record on a smoked drum. Before each test the gasometer is filled with fresh air. A more accurate arrangement is to use a mouthpiece with inspiratory and expiratory valves connected with a large gas-meter. The experiments are repeated after the subject has performed forced breathing. Artificial respiration, when applied to a subject in apnea vera, affords far less tidal movement of air than when the subject is not apneic.

(In an experiment of this sort with Dr. J. S. Haldane in which I was the subject and the tidal volume was determined with a gas-meter, the effects of the Schäfer method after forced breathing were so markedly intermittent as to form a sort of artificial Cheyne-Stokes breathing. Such observations indicate that even when natural breathing has ceased, as after drowning, the condition of the respiratory center and of muscle tonus largely determines the efficiency of manual methods of artificial respiration.)

2. The illustrated chart describing this method drawn up by the Commission on Resuscitation from Electric Shock may be obtained from the National Electric Light Association, 29 West Thirty-Ninth Street, New York City.

VIII. DETERMINATION OF THE ALVEOLAR CARBON DIOXID[3]

For this the apparatus consists essentially of a gas buret (a bulb and narrow tube) holding from 10 to 20 c.c., graduated in 0.01 c.c., and with a three-way stopcock, one tube of which is connected with a bulb containing 10 per cent. potassium hydroxid solution. A rubber tube 100 to 150 cm. long and 2 cm. in diameter has a small hole punched near one end. This hole is slipped over the inlet tube of the gas buret, which is then filled with mercury or (for student purposes) with acidulated water.

1. While at rest and breathing naturally, the subject at the end of a normal inspiration makes a sudden and very deep expiration into the tube, and then holds his tongue against the end of the tube until the buret has been filled with the air from the depths of the lungs which is caught within the tube. This is termed the "inspiratory sample," as it gives the percentage of carbon dioxid in the alveolar air at the height of inspiration. It is sufficient for most purposes, although for very accurate work it is averaged with an "expiratory sample" obtained from a sudden deep expiration into the tube at the end of a normal expiration. The alveolar air of normal men contains 5.3 to 5.7 per cent. carbon dioxid.

2. The subject takes a few minutes of vigorous exercise (running up and down a flight of stairs five or six times) and then makes another determination.

3. He then performs forced breathing and makes a determination of the carbon dioxid content of the air of the lungs during the period of apnea and again (4) at the instant when spontaneous breathing returns.

(The instruments — the so-called portable Haldane apparatus — for such determinations are made by Siebe, Gorman & Co., 187 Westminster Bridge Road, London. They analyze for carbon dioxid, oxygen and combustible gases. I have recently suggested to Siebe, Gorman & Co. that they supply a smaller Haldane apparatus to analyze only for carbon dioxid and to be called "The Small Haldane Apparatus for Clinical Purposes." They are also sole makers of the Douglas bag, Hill bag, and other useful respiratory apparatus. Bohr gas meters [1 and 10 liters per revolution] are also very useful. They are made by the Dansk Maaler Fabrik, Copenhagen.)

IX. METABOLISM EXPERIMENTS DURING REST AND EXERCISE WITH THE DOUGLAS BAG

This apparatus consists of a nose-clip, mouthpiece, inspiratory and expiratory valves, a large three-way tap and a rubber bag carried on the back. During a measured period of time (from one to five minutes) the entire volume of the expired air is caught in the bag. The volume of this air is later measured and its oxygen and carbon dioxid content determined by analysis. The oxygen consumption, and carbon dioxid elimination per minute, and the respiratory quotient are thus determinable in man under normal conditions and forms of exercise.

X. THE DEAD SPACE OF THE RESPIRATORY TRACT

The large rubber tube is placed over the Haldane analyzer (as in VIII), the other end of the tube being connected either with a rubber bag (capable of contain-

3. For the analytical methods in convenient and compact form see "Methods of Air Analysis," by J. S. Haldane, C. Griffin and Company London, 1912.

ing 3 or 4 liters) or with a small graduated spirometer. After a normal inspiration the subject suddenly makes the deepest possible expiration through the tube into the bag or spirometer. The alveolar air is thus obtained and determined as in Experiment VIII. A sample of the air in the bag or spirometer is also analyzed, and the total volume of the expiration measured. From these data, and the dead space of the apparatus, the volume of the dead space of the respiratory tract (assumed to have been filled with air containing no carbon dioxid) is easily calculated. This method which I devised has not previously been published. It is now being used in experiments to determine the influence of close, fresh and chill air on the dilatation and contraction of the bronchi.

THE CARDIAC EFFECTS OF IMMODERATE COLLEGE ATHLETICS *

LEOPOLD SHUMACKER, M.D.
AND
WILLIAM S. MIDDLETON, M.D.
MADISON, WIS.

The frequency of cardiac lesions among the men participating in competitive sports at the University of Wisconsin has emphasized the urgency for a study of this subject from a clinical point of view. From this aspect it may be divided into three parts: first, the immediate effects of severe muscular strain on the heart; second, the effects of training and a series of severe athletic contests on the heart, and, third, the ultimate effects on the subsequent life of an individual of alterations brought about in the heart through athletic contests in early life.

Recent medical literature has been rich in the study of the immediate effects on the heart of severe prolonged muscular exertion.[1] From the physiologic point of view the results of the various investigations in this field coincide sufficiently to make it possible to draw the following rather definite conclusions:

1. Muscular exercise sufficient to cause an increase in cardiac activity causes a rise in the systolic and diastolic arterial blood-pressure, as well as in the venous blood-pressure.

2. As a rule, the rise in the systolic pressure is greater than in the diastolic, thereby giving an increase in pulse-pressure. Lowsley interprets this as meaning augmentation as well as acceleration of cardiac action.

3. The rise in the systolic pressure increases after the exercise is begun and increases to a maximum, after which it may decline, to increase again to the maximum, if renewed effort is made. It remains above normal, however, until the muscular effort ceases, after which it usually declines to and frequently below normal.[2] The rise of the diastolic pressure reaches its maximum at about the same time as the systolic or a little later.[3] It fluctuates little after the maximum is reached, and returns to normal more slowly than the systolic and invariably shows a fall to subnormal after exercise (Lowsley).

4. The pulse-pressure curve generally follows the contour of the systolic curve, because of the fact that the systolic pressure fluctuates more than the diastolic (Lowsley).

5. The venous pressure usually rises to a maximum, which is maintained throughout the period of exercise. If, however, the exercise be not severe and deep breathing come on, it may drop to normal during the exertion. As a rule, it drops fairly rapidly to normal after exercise, but in some individuals remains high for a considerable period (Hooker).

6. In exercises requiring severe strain with the chest rigid and the glottis closed, the blood-pressure is increased more than the heart-rate, and the venous pressure is especially high.

7. The pulse-rate rises rapidly at first, but usually does not reach its maximum as soon as the blood-pressure does.[4] After the maximum rate has been reached, there is not much variation until the muscular effort ceases, when there is a fall to normal, or, rarely, to subnormal (Lowsley). The fall of the pulse-rate after exercise is, however, much less rapid than the fall of the blood-pressure. After prolonged rapid muscular exercise, the pulse-rate may persist above normal for a long period of time. There may be a secondary rise "which is probably a reflex effort due to the low blood-pressure of the subnormal stage" (Lowsley).

8. Since, after prolonged exertion, the systolic pressure falls more rapidly than the diastolic, there results a low pulse-pressure (Lowsley). At the time of this low pulse-pressure, albumin is frequently found in the urine. An albuminuria due to low blood-pressure has been described by Erlanger and Hooker.

9. "Rapid exercises, vigorous, fatiguing and exhausting, are followed by a fall of pressure below normal, which lasts longer than after moderate exercise, even if the former is continued for a very short period and the latter for quite a long period of time" (Lowsley).

10. "Long-distance running races and similar forms of exhaustive exercise give rise to a serious strain on the heart, as is indicated by the long period of subnormal blood-pressure" (Lowsley).

11. In hypertrophied hearts in which there is a systolic murmur not due to valvular lesions, the murmur may temporarily disappear after a severe athletic contest. On the other hand, murmurs of this character may appear in the heart, where none were heard before the contest. Barach has called attention to cases of this nature.

12. After prolonged severe contests arhythmia may appear in the cardiac action. It is possible that this may be due to a mechanical injury to the conducting apparatus; that is, fibrillary tears in the myocardium.

Concerning the morphologic effects of prolonged muscular exercise on the heart, there is less agreement than concerning the immediate physiologic effects.

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* From the Department of Clinical Medicine, University of Wisconsin.

* Owing to limitations of space, this article has been abbreviated in THE JOURNAL. The complete article appears in the authors' reprints, a copy of which will be sent by the authors or by THE JOURNAL on receipt of a stamped addressed envelope.

1. Von Frey, 1890; Kaufmann, 1892; Christ, 1894; Lewy and Zuntz and Schubray, 1896; Staehelin, 1900; Bowen, 1903; De la Camp, 1904; Gordon, Norris, 1907; Dietlen and Morwitz, Hornung, Krone, Moritz, Schott, 1908; Barach, 1910; Hooker, Lowsley, 1911; Grober, Albu and Katz and Leyhoff, 1913.

2. The extent of increase of systolic pressure depends on the exercise, the individual and his condition. In young men sprinting on a stationary bicycle, Lowsley found the time for reaching the maximum systolic pressure to vary from five to twenty-five minutes and the increase to vary from 10 to 65 mm. Hg. It was greatest when the man was fresh. The average rise in sixteen men was 32.7 mm. Hg.

3. In Lowsley's work, cited above, the rise in the diastolic pressure varied from zero to 40 mm. with an average in seventeen individuals of 22.9 mm. Hg.

4. In Lowsley's experiment the average time for reaching the maximum pulse-rate was 25.4 minutes. The average increase of pulse-rate in nine experiments was 51 per minute.

Acute cardiac dilatation may occur during sudden severe muscular effort or after an endurance contest. In the former case, the general contraction of the voluntary muscles quickly forces a large amount of blood toward the heart through the veins; that is, increases venous pressure. At the same time, the muscular contraction reduces the lumen of the arteries and arterioles in their substance, to some extent forcing the blood back into the arteries, and thus gives rise to a sudden increase in peripheral resistance. This is further relatively and absolutely augmented by the increase in cardiac activity, both giving a high arterial pressure. During the violent effort the glottis is closed and great expiratory pressure is put on the thorax with the result that intrathoracic pressure is raised. This undoubtedly interferes with free cardiac activity, but nevertheless, may be temporarily compensatory, in that it offers support to the myocardium in its resistance to the increased venous pressure. In spite of the increased intrathoracic pressure, venous-pressure increase puts a strain on the heart-muscle. If its tone be good, the strain stimulates the heart to strong contraction. If not, the heart dilates. Acute dilatation is especially frequent after a sudden severe strain. In short speed contests we have similar conditions; but here the muscles, as they rhythmically relax, offer a decreased peripheral resistance and greater opportunity for the flow of blood from the heart.

In endurance contests, on the other hand, the respiratory rate is quickened and greater freedom is given to the cardiac action. The venous pressure is less and does not need to be resisted by a high intrathoracic pressure. Indeed, belts, bands and clothing interfering with free breathing are especially liable to put an overstrain on the heart. On the other hand, the prolonged rapid action of the heart brings about a condition of fatigue which lowers the tone and increases the liability to acute dilatation. This may result some time after the causative fatiguing contest in a person under only slight exertion at the time of collapse.

Acute cardiac dilatation has occurred in three members of University of Wisconsin athletic teams, as compared with one non-athlete in a period of two years. During this period there were about 4,000 male students in attendance during the regular session of the university and not over 200 men active in the major sports. The frequency of acute dilatation among the athletes was therefore sixty times as great as among the non-athletes. A report of the cases follows:

CASE 1. (0802).—This is an interesting example of a murmur persisting over a year. It occurred in a man aged 24. The only previous medical or social history having a bearing on the present condition was an attack of "grip" three weeks before the present trouble began. Examination in October, 1910, was negative as to the cardiovascular system. Subsequently the patient had been a member of the crew for a year and a half and had had one year of football. Jan. 30, 1912, he skated most of the afternoon, rowed on the machine for fifteen minutes, came down to the shower-bath quite exhausted, stood under the hot shower for five minutes, and was just about to turn on the cold water when he felt the attack coming on; he put out his hands to support himself and fell unconscious to the floor; he had no convulsive movements, no biting of the tongue, and no involuntary passage of urine or feces. He was examined the next day and the following data obtained: Pulse 84, fairly strong and somewhat irregular. Heart ¼ inch out to the left of the midclavicular line. Accentuated pulmonic second sound, action irregular. Feb. 26, 1912: Apex, sixth interspace plus ½ inch to the left of the midclavicular line. Pulsation in the third and fourth interspaces. Enlarged ½ inch to the right and the same distance to the left and above to the lower border of the second rib. First sound murmurish, no musical element; second sound snapping at end of first sound the click of the right auriculoventricular valve being heard. Case diagnosed by Dr. J. S. Evans as dilatation with secondary hypertrophy of the heart, and relative insufficiency.

A number of examinations have been made since that time; the last, April 16, 1913, showed: pulse 90; apex, diffuse, sixth interspace. Heart enlarged ¼ inch to the right, plus ½ inch to the left. First sound poor in muscular quality and of a rumbling nature, giving the suggestion of a "run." Action quite irregular. Pulmonic second sound accentuated.

CASE 2 (1361).—The patient was examined March 27, 1912, and found to have hypertrophy or enlargement ¼ inch to right of sternum and ¼ inch to left of midclavicular line. First sound was not of strong muscular quality. Second sound was good. The patient's fourth year in distance runs in the university found him in this condition. The following was his experience on May 31, 1912, during a mile race: "It was the last lap and I was feeling as fine as I have ever felt. I was running even with the first man and just put on an extra spurt to pass him as I had done in every other race, when suddenly everything grew dark. For the rest of the race, I was semiconscious. In fact, I know nothing of the remainder, but the fellows say that I started to sway and stagger, lost my speed, would then straighten out again and thus finished the race in fifth place; I fainted as soon as I crossed the line, had to be carried from the track; was laid on the grass and slowly recovered. Then cramps in stomach began." June 4, 1913, the patient experienced marked abdominal cramps with marked hepatic congestion; the liver was palpable ¾ inch below the costal margin. June 6, 1912, the liver had returned to normal but there was still an audible apical systolic whiff. March 1, 1913, the rate was 72. The apical impulse consisted of two distinct separate thrusts. Heart dulness was enlarged ¾ inch to left and ¼ inch to right. There were no murmurs.

CASE 3 (1475).—The patient had had four years high school and three years university competition at long-distance running. The heart was examined Oct. 7, 1910. The upper border was at the third rib; the right border at the right border sternum; the left border at the fifth interspace ½ inch outside the midclavicular line. The cardiohepatic angle was fairly acute. The first sound was loud and booming, with no murmurs. The second sound was accentuated and ringing in character. The case was diagnosed as hypertrophy of the left ventricle; the right heart apparently normal.

In the spring of 1911, while training for long distance work, the patient first noticed pain in the hepatic and splenic regions. Examination of the heart before exertion showed little change from conditions described above. After severe exertion the heart boundaries were found to be increased 1 inch to the right and ½ inch to the left; the cardiohepatic angle was obtuse and the liver dulness increased; murmurs appeared at the mitral, pulmonic and tricuspid areas. The heart did not regain its normal condition until twenty-four hours later. The patient was advised to discontinue competitive sports, but after three weeks' idleness he attempted a mile in moderate time and fell over with acute dilatation. Examination showed the heart boundaries increased 1½ inches to the right of the sternum and ½ inch to the left of the midclavicular line at the fifth interspace. The cardiohepatic angle was obtuse. There were weak first and second sounds accompanied by a faint murmur. The liver and spleen were enlarged.

The increased cardiac area and other signs gradually subsided during the next two weeks, but four months later the right heart still exhibited signs of dilatation with compensatory hypertrophy. Following this break in compensation the patient became very susceptible to acute infections.

This case is an example of a heart overworked for several years, finally showing signs of breaking compensation under training and giving away more severely after a limited period of rest followed by sudden strain.

CASE 4 (4004).—This was a case of acute cardiac dilatation in a young man who had not undergone athletic training. At the first examination, Oct. 5, 1911, the heart boundaries were: left, fifth interspace ¼ inch within the midclavicular line; upper boundary, third interspace; right border on sternum. The cardiohepatic angle was acute. The pulse-rate was 96. Restricted exercise was recommended. The student, however, felt that he should take active exercise and, while running on the track at the gymnasium, Nov. 14, 1911, was suddenly attacked by acute cardiac dilatation, marked by syncope, dyspnea and nausea. The sputum was blood-tinged. The heart boundaries were as follows: apex, in the fifth interspace, midclavicular line; upper boundary, third interspace; right boundary, 1 inch to the right of the sternum. The cardiohepatic angle was obtuse. The patient did not regain normal cardiac condition until February, 1912.

Chronic sinusitis may be taken as a possible predisposing factor in the case. No other factor in the patient's previous history seems to have a bearing on the acute dilatation, with the exception of the strenuous exercise which he took with the idea of improving his health.

From this review of the immediate effects of severe muscular exercise on the heart, we conclude that:

1. Normally, during severe muscular exertion, there is an increase of pulse-rate, arterial and venous blood-pressure, pulse-pressure and of the systolic output of blood.

2. In the period immediately following, there is a fall of pulse-rate to normal, and of arterial blood-pressure, pulse-pressure and, frequently, of the diastolic size of the heart to below normal.

3. Increased diastolic distention during violent effort may reach a point beyond the capacity of the heart-muscle to bring about a complete systole. This results in the typical symptoms of acute cardiac dilatation. The weakened condition of the cardiac muscle is shown after the cessation of bodily effort by its inability to contract to its normal size or below. This precludes all possibility of obtaining the rest needed after the strain of increased diastolic expansion and systolic contraction prevalent in very active exercise.

4. Clinically, it is well known that infectious diseases predispose to myocardial weakness and to acute dilatation. Experimentally, de la Camp has shown that starvation, likewise, so predisposes. Some authors[7] doubt if there be non-pathologic hearts with a musculature so weak that it can be strained sufficiently by muscular exertion to dilate acutely. Case 2 (1361) appears to indicate that at least chronic overstrain may weaken the myocardium to this extent.

5. At present we have no definite means of judging by clinical tests whether or not an untried apparently normal heart is capable of standing the strain of athletic contests. Some weak hearts remain dilated after a relatively slight exertion and are, therefore, clearly without adequate tone to withstand the severe strain. On the other hand, hearts known to be diseased may respond in the normal manner by contracting slightly after the cessation of moderate exercise. Hearts that give distinct systolic murmurs may withstand a Marathon race better than hearts apparently much more normal (Barach).

6. Extreme care should be given to the examination of the heart before and after moderate exercise in all who desire to enter severe athletic contests. Failure of normal reaction should bar any one from such contests. Even those withstanding these contests well should have the heart examined at frequent intervals during their training to avoid overstrain. Many men weaken the heart-muscle, instead of strengthening it, by continued overstraining. Riviere's, 1909, observations on the effect of prolonged overstrain on young boys, which he found to result in the production of persistent cardiac changes, should serve as a special warning in care of the young.

7. Infectious diseases are especially liable to weaken the myocardium. For this reason, severe athletic contests should be avoided by sufferers with, or convalescents from, acute infectious diseases, even of so mild a nature as tonsillitis or grip. "To work a cold off" by severe exercise is dangerous advice.

The question next naturally arises as to the condition of the heart in athletes who pass through one or more seasons of training and athletic contests without obvious symptoms of cardiac trouble.

To determine the extent of cardiac alterations in athletes at the University of Wisconsin, we have made an examination of the hearts of forty-five athletes who have taken part in major sports at the university, and for the sake of control have examined the hearts of twenty non-athletic students. In both cases we have been guided in our selection merely by the desire to pick

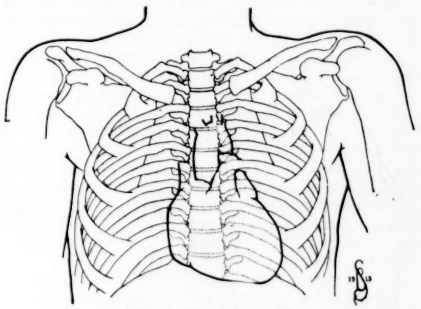

Fig. 1.—Non-athlete 4119.

out men whose social and medical history gives no reason for assuming that extraneous factors have altered the normal structure or functioning of the heart. The results are summarized in the accompanying tables and are illustrated by the drawings. In the tables there is given for each student, first, the filing number under which his records are kept at the office of the medical adviser and date of examination; then in turn his age, height, weight; habits in the use of tea and coffee, alcohol and tobacco; medical history with respect to tonsillitis, chorea and acute rheumatic fever (in no case were there physical signs or a history of venereal disease); a statement as to whether the heart had previously been found normal and, if so, when; athletic history; the rate of beat of the heart before and after fifty running steps; systolic and diastolic blood-pressure, and the pulse-pressure at rest, sitting. Except where indicated the students were not "in training" at the time of the examination.

Of the thirty-six men examined who have been active in college athletics, all showed cardiac hypertrophy. This was especially marked in most of the prominent college athletes. Figures 3 to 7 illustrate the hypertrophy as revealed by roentgenography. A ventrodorsal roentgenogram was made in each case with the tube

7. Hoffman, 1901; von Criegern, 1902; Starck, 1905; Selig, 1905, 1907; de la Camp, 1904.

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0.75 meters above the center of the sternum. From the photographic plate a careful drawing was made. Care was taken to make the outline of the cardiac shadow as accurate as possible. After careful study a few details not clearly visible in the roentgenograms have been added to the figures of the heart in order to indicate the approximate position of auricles, ventricles and great vessels; the part of the heart hidden in the shadow of the liver and diaphragm has also been added; but these details, unlike the general outline of the heart shadow, are merely approximate. The skeletal outlines and the outlines of the body have also in places been filled out where not coming on the photographic plate or not quite clear; but in all such cases the attempt has been made to make such outlines as accurate as possible. Lines which have been added for the sake of completing the picture in no case affect the relative position of the outline of the cardiac shadow as compared with the size of the thorax.

Figure 1 shows the heart of a normal non-athletic man of sedentary habits (No. 4109 in Table 1). Figures 3 to 7 show the hearts of Athletes 1574, 0633, 0090 and 2148 in Table 3, and of No. 0802 in Table 6.

Figure 3 (No. 1574) is from a roentgenogram of an athlete active several years, two at the university, in football and basket-ball. The picture was taken in the spring of 1913 after the close of the basket-ball season.

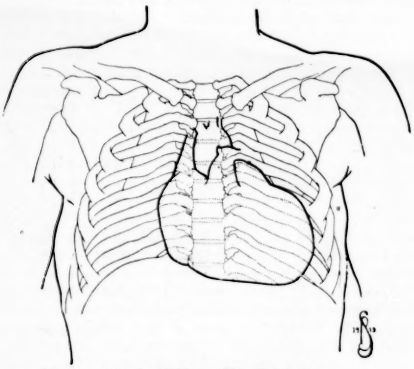

Fig. 3.—Athlete 1574 (Table 3).

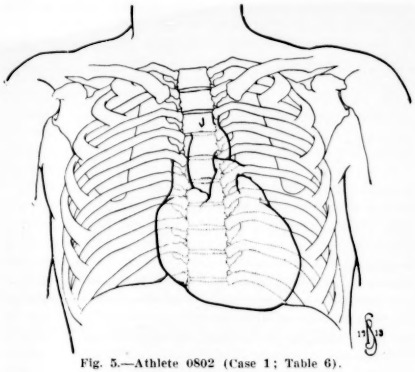

Fig. 5.—Athlete 0802 (Case 1; Table 6).

In October, 1911, no enlargement of the heart and no functional irregularities were noted on physical examination. The pulse at this time was 68 at rest. In October, 1912, some cardiac hypertrophy was noted. At the time the roentgenogram was taken this hypertrophy was more marked and the pulse-rate at rest had fallen to 48. There was slight irregularity in the action of

TABLE 1.—GROUP 1, CONTROL: NO ACTIVE SPORTS OR TRAINING

Filing No.*	Date of Examination	Age	Height, Ins.	Weight, Lbs.	Use of				History			Heart Normal	Pulse-Rate			Blood-Pressure		
					Tea	Coffee	Alcohol	Tobacco	Tonsilitis	Chorea	Rheumatism		Before	After	Percentage Increase	Systolic	Diastolic	Pulse-Press.
8774	9/—/13	18	68	114.8	+	0	0	0	0	0	0	9/—/13	94	116	23.4	102	78	24
8800	9/—/13	22	66	106.5	+	+	+	+	0	0	0	9/—/13	96	114	18.7	112	86	26
8816	9/—/13	19	61.9	106.3	+	+	0	0	0	0	0	9/—/13	88	116	31.8	108	82	26
8813	9/—/13	18	66	126	+	0	0	0	0	0	?	9/—/13	80	120	50	122	90	32
8782	9/—/13	18	62.8	115.3	+	+	0	0	+	0	0	9/—/13	84	112	33.3	114	92	22
4109	9/—/13	23	69.6	143	0	0	0	0	?	0	0	9/—/13	84	120	42.8	100	68	32
8834	9/—/13	25	63.6	123	0	+	+	0	0	0	0	9/—/13	72	98	36.1	130	90	40
8934	9/—/13	20	67.4	116	+	+	0	0	0	0	0	9/—/13	84	112	33.3	110	78	32
8948	9/—/13	19	62.2	116.8	0	0	0	0	0	0	0	9/—/13	80	112	40	104	80	24
0724	4/—/13	18	70.8	163.5	0	0	0	0	1	0	0	9/—/12	60	88	46.6	114	72	42
2927	4/—/12	..	.....	.....	0	0	0	0	0	0	0	9/—/12	70	80	14.2	....	..	..
2344	4/—/12	21	69.5	136.3	+	0	0	+	0	0	0	9/—/12	80	100	25	130	90	40
3039	4/—/12	23	.....	.....	+	0	0	0	0	0	0	9/—/12	72	100	38.8	....	..	..
2450	11/—/13	21	67.5	150.2	0	+	+	+	+	0	0	10/—/11	80	100	25	108	80	28
10321	11/—/13	22	68	143	0	0	0	0	0	0	0	10/—/13	72	100	38	120	88	32
4326	11/—/13	29	66.5	120.7	+	0	0	0	+	0	0	10/—/13	72	96	26	102	76	26
5698	11/—/13	27	69	155	+	+	+	+	0	0	0	11/—/13	84	108	28	112	82	30
4088	11/—/13	19	65	134	0	+	0	0	0	0	0	11/—/13	88	118	34	108	74	34
4243	11/—/13	21	68.2	130.4	+	+	0	0	0	0	0	10/—/11	72	100	41	118	80	38
8450	11/—/13	21	....	.....	0	0	0	0	0	0	0	10/—/10	70	92	32	108	72	36
Average	.....	22.3	67.2	137.7	..	..	..	..	..	..	..	.....	77	103	33.7	111.1	79.4	31.8

* Special notes on Group 1:
0724: Exercise develops accentuation of aortic and pulmonic seconds.
2927: Moderate athlete; no training.
2344: No active sports; moderate light work.

the heart, but the man had had no subjective symptoms of cardiac distress during or after athletic contests. As may be seen from the roentgenogram the enlargement is marked in both the right and left sides, and there has undoubtedly been dilatation as well as hypertrophy.

Figure 5 is from an athlete (No. 0802) who rowed for one and a half years in college. In September, 1910, no marked cardiac hypertrophy was noted. The pulse-rate was 60. In January, 1912, while training for the crew, he suffered from acute dilatation of the heart as previously described in Part I. After this experience no further athletic training was attempted. The student was left as much at rest as his academic pursuits would permit and under careful medical observation. In the spring of 1913 cardiac disturbance was still quite marked. The pulse-rate at rest was 100, and after fifty stationary running steps it rose to 135. There were subjective feelings of palpitation at times. As may be seen from the roentgenogram, there is still marked evidence of hypertrophy together with dilatation particularly of right heart.

In none of the cases cited has there been a history of infectious disease or other trouble to which a weakening of the heart might be ascribed.

TABLE 2.—GROUP 2, ATHLETES: "NORMAL" HEARTS

Filing No.*	Date of Examination	Age	Height, Ins.	Weight, Lbs.	Use of				History			Heart Normal	Number of Years in					Pulse-Rate			Blood-Pressure		
					Tea	Coffee	Alcohol	Tobacco	Tonsilitis	Chorea	Rheumatism		Crew	Track	Baseball	Basket-Ball	Football	Before	After	Percentage Increase	Systolic	Diastolic	Pulse-Press.
1066	4/—/13	18	74	170	0	0	M.	+	0	0	0	9/26/12	1.5	0	0	0	0	84	108	28.5	127	90	37
2917	4/—/13	24	72.5	174.9	0	0	0	0	0	0	0	10/—/10	2	0	0	3	3	84	100	19	120	90	30
1177	4/—/13	27	72	175	+	+	0	+	0	0	0	10/—/11	1	0	0	0	0	78	104	33.3	120	90	30
Average	.....	23	72.8	173.3	..	..	..	..	..	..	..	.....	..	..	..	..	..	82	104	26.9	122.3	90	32.3

* Special notes on Group 2:
2917: Examination at time of test revealed enlargement ½ inch to left.
1177: Enlarged area of cardiac dulness ½ inch to left.

TABLE 3.—GROUP 3, ATHLETES: CARDIAC HYPERTROPHY WITH SLOW ACTION

Filing No.*	Date of Examination	Age	Height, Ins.	Weight, Lbs.	Use of				History of			Heart Normal	Number of Years in					Pulse-Rate			Blood-Pressure		
					Tea	Coffee	Alcohol	Tobacco	Tonsilitis	Chorea	Rheumatic Fever		Crew	Track	Baseball	Basket-Ball	Football	Before	After	Percentage Increase	Systolic	Diastolic	Pulse-Press
A. WITHOUT MURMURS																							
1574	Apr., 1913	22	65	168	+	+	0	0	0	0	0	Oct., 1911 Oct., 1910	0	0	7	6	6	48	76	58.3	116	85	31
0633	Apr., 1913	22	73	195	+	+	M.	0	0	0	0	Oct., 1911 Oct., 1910	0	0	0	7	7	60	84	40	132	100	32
2148	Apr., 1913	22	71	180	0	0	0	0	2	0	0	Oct., 1911	3	0	0	0	0	54	76	40.7	136	105	31
0939	Apr., 1913	21	66	157	0	0	0	0	0	0	0	9/18/11 Oct., 1910	0	6	0	0	0	78	84	7.7	126	96	30
0690	Apr., 1913	21	69	195	0	+	0	0	1	0	0	Oct., 1911	½	2	0	0	6	60	84	40	122	90	32
3214	Apr., 1913	24	72	185	+	+	+	M.	0	0	0	†	½	0	0	0	1	60	84	40	132	100	32
0640	Apr., 1913	24	71.8	183	+	+	0	M.	0	0	0	†	4	0	0	0	4	54	78	44.4	116	80	36
1663	Apr., 1913	22	69.3	131	+	+	0	0	+	0	0	Sept.1911	0	4	0	0	0	60	78	30	110	91	19
B. MURMURS AFTER TEST																							
3137	Apr., 1913	..	69.3	170	+	+	0	0	1	0	0	†	1½	0	0	0	0	60	84	40	...	...	..
0782	Apr., 1913	20	66.5	115.8	0	0	0	+	0	0	0	†	1½	0	0	0	0	72	84	16.6	146	104	42
Average	.....	22	69.3	166.9	..	..	..	..	..	..	..	.....	..	..	..	..	..	60.6	81.6	35	126.2	94.6	31.6

* Special notes on Group 3:
1574: No hypertrophy in October, 1911; pulse-rate 68. In October, 1912, enlarged ½ inch to left. February, 1913, action irregular boundaries; upper border second rib; 1½ inches to left of the midclavicular line 1 inch to right of sternum.
0633: Diffuse apical impulse. Cardiac dulness enlarged 1¼ inch to left and ½ inch to right. Accentuated pulmonic second.
2148: Enlarged ½ inch to left. Muscular sound, sharp. Pulmonic first, rough.
0939: Enlarged 1 inch to left and ½ inch to right. Pulmonic second accentuated. Carried off field twice after relay races.
0690: October, 1910, rate 92; October, 1911, 80 with no hypertrophy. September, 1912, enlargement ¾ inch to left. March, 1913, rate 60, enlarged 1½ inch to left and ½ inch to right.
3214: No enlargement. Some irregularity, which on exertion is increased, a number of beats being dropped on deep inspiration.
0640: Hypertrophy on two previous examinations. At present, enlarged just to right of sternum and ½ inch to left of midclavicular line.
NOTE—Development of a mitral murmur later in training period caused dropping from crew.
1663: Some hypertrophy in September, 1912. At present, enlarged ¾ inch to left and ¼ inch to right.
3137: Enlarged ½ inch to left. On exertion, develops a soft systolic murmur audible over entire pericardium but with maximum intensity at apex.
0782: At examination in October, 1910, 1911 and 1912, cardiac enlargement was found. October, 1912, displayed doubtful untransmitted mitral murmur. Latest examination gave systolic thrill. Apex sixth interspace plus ¼ inch to left of midclavicular line; no murmur before exercise, but a distinct "murmurishness" develops in third and fourth interspaces to left of sternum on exertion. First sound booming; second pulmonic markedly accentuated.
†No record.

Functionally, the hearts of athletes may be grouped into several classes: (1) physiologically hypertrophied hearts, Group 2, Table 2; (2) dilated and hypertrophied hearts with slow rate of beat and good compensation, sometimes, however, showing some arhythmia or murmur after exercise, Group 3, Table 3; (3) dilated and hypertrophied hearts with a pulse-rate greatly increased on slight exertion, Group 4, Table 4; (4) dilated and hypertrophied hearts with a murmur before and after exercise, a relatively high pulse-rate, usually much increased by exercise, Group 5, Table 5; (5) hearts convalescent from acute dilatation, Group 6, Table 6, and hearts showing lesions several years after ceasing athletic training, Group 7, Table 7.

In Table 1 are given data concerning the twenty non-athletes examined for the purpose of control. Figure 1 illustrates the heart of a student of this type. The systolic blood-pressure averaged 111.1, the pulse-pressure 31.8 and the pulse-rate showed an average increase after fifty running steps of about 33.7 per cent.

In Table 2 are given data concerning the relatively few athletes trained for major sports whose hearts appeared to be essentially like those used to a considerable amount of moderate exercise. In these men, however, there was somewhat more cardiac hypertrophy and a suggestion in most cases of some dilatation as well as hypertrophy. The sounds were normal. Both the systolic blood-pressure and the diastolic pressure averaged considerably higher than in those in Table 1. The pulse-pressure was about the same. The increase in the pulse-rate after fifty running steps was less marked.

In Table 3 are given data concerning a group of athletes with dilated hearts in which the compensatory hypertrophy had produced a myocardium that gives a slow, strong beat which, as a rule, does not quicken greatly after fifty running steps. The blood-pressure is frequently relatively low. Many of the best college athletes belong in this group. Compensation is excellent, although occasionally there is slight arhythmia, and in two cases there was a slight mitral murmur after the test. Figures 3, 4, 5, and 6 illustrate the type of heart here described.

In Table 4 are given data concerning a group of athletes with dilated, hypertrophied, irritable hearts. The most marked characteristics of the hearts of these men is the remarkable jump in pulse-rate shown after fifty running steps, the jump averaging 55.2 per cent. of the rate before the test. Frequently there is also a slight arhythmia. The blood-pressure is relatively high, the pulse-pressure somewhat lower than the normal. It is probable that men with this type of heart run considerable danger of acute dilatation. It is evident that compensatory hypertrophy is less perfect than in the preceding class.

In Table 5 are given data concerning a group of athletes with dilated hypertrophied hearts with a well-marked mitral murmur. They have a relatively high pulse-rate and, in most cases, show a high increase after fifty running steps. Systolic pressure is not so high as in the preceding group. The pulse-pressure, as a rule, is nearly normal. Some of the men here tabulated will probably acquire by compensatory hypertrophy a thicker myocardium, the pulse will become slower and the mitral murmur disappear. Others will approach the irritable type with rapid pulse on exertion, and these also may, by the decreased diastole, lose the mitral murmur.

TABLE 4.—GROUP 4. IRRITABLE HYPERTROPHIED HEARTS IN ATHLETES

Filing No.*	Date of Examination	Age	Height, Ins.	Weight, Lbs.	Use of: Tea	Coffee	Alcohol	Tobacco	History of: Tonsilitis	Chorea	Rheumatic Fever	Heart Normal	Number of Years in: Crew	Track	Baseball	Basket-Ball	Football	Pulse-Rate: Before	After	Percentage Increase	Blood-Pressure: Systolic	Diastolic	Pulse-Press.
A. SHORT PERIOD OF TRAINING																							
0928	4/—/13	22	67.3	135.5	M.	M.	0	0	0	0	?	10/—/11	0	1	0	0	0	60	110	83.3	120	80	40
3135	4/—/13	19	70	170	0	+	0	0	0	0	0	10/—/12	¾	0	0	0	0	72	96	33.3	138	100	38
3132	4/—/13	25	70	160	0	0	0	0	1	0	0	†	0	0	2	0	0	72	96	33.3	136	104	32
3028	4/—/13	18	72	186.3	+	+	0	0	0	0	?	10/—/12	1	0	0	0	0	64	96	50	114	78	36
B. LONG TRAINING																							
2798	4/—/13	21	72.8	191	0	0	0	0	0	0	0	9/—/12	1	0	0	+	0	70	120	71.4	...	...	....
3100	4/—/13	19	73.5	185	+	+	0	M.	0	0	0	†	3	0	0	0	3	68	112	64.7	128	85	43
0800	4/—/13	21	71	173	0	0	0	0	1	0	0	10/—/11	1½	0	0	0	2	72	120	66.6	141	110	31
2663	4/—/13	28	71.5	171.3	0	0	0	0	0	0	0	†	3½	0	0	0	0	84	120	42.8	144	100	44
1838	4/—/13	20	71.5	168.5	+	+	0	+	1	0	0	†	0	0	3	+	+	84	128	40.4	158	108	50
1284	4/—/13	21	70.5	160	+	+	0	0	1	0	0	9/—/12	½	0	0	+	2	78	120	53.5	142	110	32
0159	4/—/13	20	71	171.8	+	+	0	0	0	0	0	†	1½	0	0	0	0	84	142	68.9	132	102	30
3057	4/—/13	21	70	155.3	0	0	0	0	0	0	0	†	1½	0	0	0	0	80	120	50	120	90	30
Average	.....		21¼	70.91	168.97	..	..	..	..	..	..	..	.....	..	..	..	..	..	76.8	115	55.2	133	97	34.1

* Special notes on Group 4:
0928: Slight enlargement to left; before exercise heavy first sound, becoming impure on exercise. Pulmonic second accentuation. After exertion, some irregularity.
3135: Enlarged ½ inch to left. Decided irregularity of pulse for two minutes after test.
3028: Enlarged ½ inch to left. Aortic second snapping.
2798: Before exercise, cardiac dulness extended ½ inch to left of midclavicular line; which enlargement is increased ¼ inch by exertion. Accentuated pulmonic second.
3100: September, 1912, enlarged ¾ inch both to right and to left. Later examination shows enlargement ¾ inch to left and ¼ inch to right. Pulmonic second accentuated.
2663: October, 1910, enlargement ½ inch to left.
1838: October, 1912, aortic systolic murmur transmitted to neck. At present, action irregular; exercise increases area of dulness perceptibly to left of midclavicular line and develops an apical systolic murmur heard all over precordium.
1284: Enlarged ½ inch to left; action irregular; aortic and pulmonic second sounds accentuated. Exercise develops decided impurity of mitral first.
0159: October, 1911, enlarged ¼ inch to left; now ¾ inch to left.
3057: October, 1911, enlarged ½ inch to left.
† No record.

In Table 6 are shown the results found in two hearts several months after acute cardiac dilatation. In one heart, eleven months after the dilatation, the compensation is already good. In the other heart, fifteen months after the acute dilatation, the pulse-rate is high, the pulse-pressure is low and there is still a mitral murmur.

In Table 7 are classed those men who, at one time active in competitive sports, have had no training for a period of at least one year. Most of these are old high-school athletes. Of the seven men, all show either valvular murmurs or marked departure from the normal heart-sounds. Five of the men in Group 7A show the same irritability as those in Group 5. These data tend to prove that the abnormalities developed by severe competitive sports persist in many cases.

Our studies show that while acute cardiac dilatation of an immediate serious nature is not so frequent as one might expect among college athletes, marked cardiac hypertrophy is the rule rathen than the exception, and that in a considerable percentage of cases functional disturbance of a more or less serious nature accompanies the hypertrophy.

The marked cardiac lesions found in so large a proportion of our college athletes present a serious problem, especially at a time when physical training is extending from the colleges to the secondary schools and the popular idea of a good physical trainer is so often the man who can turn out winning teams. While it is not desirable unduly to restrict healthy sports, on the other hand, the leaders in athletic sports should not be called on to sacrifice too much the future for the present. The tendency in boys from 14 to 18 to develop cardiac lesions which are transitory, if the heart is not at this time subjected to overstrain (see Krehl, p. 715) complicates the problem when extended to high-school athletes.

There seems reason to believe that at present there is an increase in cardiovascular disease in this as in most civilized countries. The relations of violent muscular exertion to such diseases should be thoroughly understood. The college athlete represents a type of special interest in this connection. During violent athletic contests he is stimulated by the excitement of the crowd to exert himself far beyond the point of physical comfort. Between seasons and when out of training he is apt to lead a more or less sedentary life, and this becomes usually the case after his athletic career is over.

TABLE 5.—GROUP 5, ATHLETES: HYPERTROPHIED HEARTS. MURMUR BEFORE AND AFTER TEST

Filing No.*	Date of Examination	Age	Height, Ins.	Weight, Lbs.	Use of: Tea	Coffee	Alcohol	Tobacco	History of: Tonsillitis	Chorea	Rheumatic Fever	Heart Normal	Crew	Track	Baseball	Basket Ball	Football	Pulse-Rate: Before	After	Recuperation Increase	Blood-Pressure: Systolic	Diastolic	Pulse-Press.	Nature of Murmur
0139	4/13	....	71.5	173	0	+++	0	0	0	0	0	+	+	0	0	0	0	95	120	26.3	120	82	38	Cardiorespiratory.
2791	4/13	23	69	121	0	+++	0	0	0	0	0	+	0	+	0	0	0	92	80	29	130	95	35	Soft systolic, transmitted.
0522	4/13	24	71.5	166.5	0	++	0	+	0	0	0	9/11	0	3	0	0	0	64	132	106.2	128	89	39	Systolic apical swish.
0053	4/13	22	74	165.5	0	+	0	+	0	0	0	10/11	0	0	0	0	0	72	106	38.9	132	90	42	Rough mitral systolic.
3024	4/13	20	72.5	166.5	0	+	0	+	0	0	0	9/11	1/2	0	0	0	0	72	106	38.9	132	90	42	Systolic apical whiff.
1053	4/13	25	64	128.8	0	+	0	+	?	0	0	10/11	1/2	0	0	0	0	72	106	47.2	119	88	31	Cardiorespiratory, musical on expiration.
1703	4/13	25	64	128.5	0	+	0	+	0	0	0	9/11	0	2	0	0	0	72	144	44.4	119	87	32	Cardiorespiratory.
0004	4/13	25	74	180	0	+	0	++	0	0	0	9/12	0	0	0	0	0	115	134	17.4	123	90	32	Loud, blowing, mitral systolic, well transmitted.
0843	4/13	25	72.8	168	0	+	0	+	1	0	0	10/11	0	5	0	0	0	84	120	42.1	128	110	18	Rough, systolic, mitral, transmitted.
0573	4/13	19	73.5	168.8	0	+	0	+	0	0	0	9/11	0	0	0	0	0	76	118	58.1	136	88	38	Mitral systolic, marked on exertion.
2889	4/13	22	72.5	173	0	+	0	+	0	0	0	9/11	1/2	0	0	0	0	84	100	28.1	126	88	38	Soft systolic, mitral on exertion.
0093	4/13	21	70.8	152.8	0	+	0	+	0	0	0	9/†	2 2/3	0	0	0	0	84	100	19.6	108	90	18	Soft systolic at base, untransmitted.
Average	.....	22.4	70.3	150.7	..	..	..	..	..	..	..	.....	..	..	..	..	..	80.6	112.8	40.2	123.9	92.3	31.6	

*Special notes on Group 5:
0139: Marked accentuation of aortic second, murmurs more marked in dependent position. Now out for crew.
2791: Before exercise, enlarged ½ inch to left, action irregular and above-described murmur. After exercise, action is in form of peculiar "runs"; area of dulness enlarges ¾ inch to either side.
1022: Enlarged ¾ inch to left and ½ inch to right. Before exercise in erect posture, reduplication of first. "Swish" developed at apex on exertion.
0521: Enlarged ¾ inch to left. Muscular quality poor; action, irregular.
3024: Enlarged 1 inch to left and ¾ inch to right.
1053: Enlarged slightly to left and ½ inch to right; action irregular and first sound slurred. In addition to cardiorespiratory murmur mentioned in table, a soft untransmitted systolic murmur is heard in fourth left interspace. Coughing after exercise.
1703: Enlarged ¾ inch to left and ½ inch to right. Systolic murmur lies in the existence of sinus infection. Apex impulse in sixth interspace. Enlarged ¾ inch to left. Murmur heard is transmitted to axilla and well into back. Anginoid pains and gastro-intestinal symptoms.
0843: Enlarged ¼ inch to right and ½ inch to left. Poor muscular quality. Accentuated aortic second. Anginoid pains on exertion in training.
0573: No enlargement.
2889: September, 1912, showed hypertrophy ¼ inch to left. Now, before exertion enlarged ½ inch to left and ¼ inch to right. Area of dulness increases ¼ inch to left after test.
0093: Enlarged ½ inch to left and ¼ inch to right.
†No record.

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The effects on the after-life of the members of the college crews at Oxford and at Harvard have given rise to several studies, but the results are not of much value in throwing light on the general problem. They show in general that the crew men have lived a few years longer than would have been expected from mortality tables used by life-insurance companies, but accurate medical details are wanting and we have as yet no good data on the life expectations of the picked classes from which the crew men have come. Perhaps the most significant tables are those of the Surgeon-General of the Navy, who reports six deaths in athletes from diseases attributable to athletic overstrain to one in non-athletes among the select lot of young men trained at Annapolis. It seems reasonable to assume that a young man whose athletic training had led to cardiac hypertrophy with some functional disturbance likely to increase when the large heart no longer has exceptional work to do, will be physically handicapped in life, to what extent, careful study of numerous men is necessary to show. It will be found not only in the field of cardiovascular diseases, but also in the decreased resistance which such men show to acute infections such as typhoid fever and pneumonia. Dr. Harlow Brooks in 1913, as medical officer of a regiment of the National Guard in New York, in which there are many college athletes from five to fifteen years out of college, has found the health of these men on the whole decidedly inferior to that of the other members of the regiment.

CONCLUSIONS

1. Athletic training leads at first to physiologic hypertrophy of the heart; but when prolonged and marked by

TABLE 6.—GROUP 6, ATHLETES: ACUTE DILATATION

Filing No.*	Date of Examination	Age	Height, Ins.	Weight, Lbs.	Use of				History of			Heart Normal	Number of Years in					Pulse-Rate			Blood-Pressure		
					Tea	Coffee	Alcohol	Tobacco	Tonsilitis	Chorea	Rheumatic Fever		Crew	Track	Baseball	Basket Ball	Football	Before	After	Percentage Increase	Systolic	Diastolic	Pulse-Press.
2807	5/—/13	23	70	142	+	+	0	0	0	0	0	†	0	4	0	0	0	72	84	16.6	122	95	27
0802	4/—/13	24	73	172	0	0	0	+	0	0	0	9/—/10	1½	0	0	0	0	100	135	35	121	98	23
Average	.....	23.5	71.5	157	..	..	..	..	..	..	..	.....	..	..	..	..	..	86	109.5	25.8	121.5	96.5	25

* Special notes on Group 6:
2807: 3/27/12, some cardiac enlargement. 5/31/12, acute dilatation of heart. At present, two separate thrusts to apical impulse. Enlarged ¾ inch to left and ½ inch to right. Anginoid pains at times. Some digestive derangement.
0802: 1/30/12. Acute cardiac dilatation. Present examination points to existence of extra systoles. Enlarged ½ inch to left and ¼ inch to right. Mitral first consists of a number of interrupted sounds. Palpitation.
† No record.

TABLE 7.—GROUP 7, OLD ATHLETES: NO ATHLETIC TRAINING FOR AT LEAST A YEAR (CHIEFLY HIGH-SCHOOL ATHLETES)

Filing No.*	Date of Examination	Age	Height, Ins.	Weight, Lbs.	Use of				History of			Heart Normal	Number of Years in					Pulse-Rate			Blood-Pressure		
					Tea	Coffee	Alcohol	Tobacco	Tonsilitis	Chorea	Rheumatic Fever		Crew	Track	Baseball	Basket Ball	Football	Before	After	Percentage Increase	Systolic	Diastolic	Pulse-Press.
A. MURMURS AND IRRITABLE HEART																							
2891	Apr. 1913	22	71.5	155	+	+	0	+	0	0	0	†	0	0	0	0	1	78	110	41	116	84	32
3142	Apr. 1913	21	72	165	+	+	0	0	0	0	0	†	0	2	0	2	0	80	138	72.5	130	91	39
3151	Apr. 1913	30	69	185	0	0	0	0	0	0	0	1903(?)	0	0	0	0	4	80	138	72.5	160	90	70
2180	Apr. 1913	24	64.5	144	+	+	+	+	3	0	0	†	0	0	4	0	4	66	98	48.4	118	98	20
3032	Apr. 1913	19	70.8	167.8	0	0	0	+	?	0	0	†	0	0	4	4	3	60	88	46.6	120	82	38
B. MURMURS AND NON-IRRITABLE HEART																							
2785	Apr. 1913	25	70.8	153	+	+	0	+	1	0	0	†	0	0	M.	M.	0	88	92	4.4	104	78	26
2792	Apr. 1913	19	69.5	139	+	+	0	+	0	0	0	†	0	2	0	0	0	80	100	25	128	95	33
Average	.....	23	69.7	158.7	..	..	..	..	..	..	..		..	..	..	..	..	76	109	44.3	125	88.3	37

* Special notes on Group 7:
2891: Played football in 1909. Cardiac enlargement ¼ inch to left. Systolic thrill. After exercise, first sound too short.
3142: Enlarged ½ inch to left. On exertion, mitral systole becomes decidedly impure. All athletics were in high school. Some palpitation on exertion. October, 1911, some enlargement determined.
3151: Declared well in 1903. Four years of college football, last in 1907. Scarlet fever as child. Enlarged 1 inch to left and slightly to right. Poor muscular quality. Diastolic murmurs in third and fourth left interspaces, disappear on exertion. Some irregularity. Palpitation. Vertigo. Probably aortic insufficiency.
2180: Heart enlarged 1 inch to left. Muscular quality poor. Snapping aortic second. All athletics in high school.
3032: Enlarged ¾ inch to left. Systole murmurish in fourth left interspace. All athletics in high school. October, 1912, cardiac hypertrophy noted.
2785: Reduplication of mitral first in erect posture; in recumbent, some slurring. Gave up athletics five years ago—never very active previously.
2792: April 10, 1913, second sound reduplicated. At present, enlarged ¾ inch to left and ½ inch to right. First sound, loud, muscular; second, accentuated. All athletics at high school.
† No record.

severer athletic contests it usually leads to hypertrophy plus dilatation of a variable degree, frequently marked by valvular insufficiency.

2. Functionally, the hypertrophied heart, even when dilated and giving distinct evidence of valvular insufficiency, may prove more fitted to carry the man through a severe athletic contest than a normal heart would be. On the other hand, acute cardiac dilatation occurs more frequently in athletes and men used to severe muscular strain than in normal men, and the ultimate effects are more prolonged and severe.

3. There is reason to believe that for normal human activities an "athletic" heart is distinctly disadvantageous.

We desire to express our appreciation for valuable suggestions and hearty cooperation in this work on the part of Dr. C. R. Bardeen, Dr. Joseph S. Evans, Dr. Robert Van Vabzah and Mr. Hodges.

ISCHEMIC PAINS *

A. R. MITCHELL, M.D.
LINCOLN, NEB.

The term "ischemic" is applied only to those localized recurring pallors which affect circumscribed areas for an indefinite and usually a very transient period, but which may recur at any time, under conditions similar to the first exciting cause. I do not include in the definition the general pallor or bloodlessness of the entire body-surface which follows shock or loss of blood. It is not necessary to define pain here, further than to mention the fact that the pains of ischemia are subject to the same variation of degree as are pains in other cases. On first thought the consideration of ischemic phenomena might seem to belong to the domain of the internist. In the more recent surgical works, but more especially in Cabot's "Differential Diagnosis," quoting J. Pal's book on *Gefässkrisen*, the subject has been given special attention. Thus, Cabot says:

More useful on the whole, is the book on *Gefässkrisen*, in which Pal elaborates upon the basis of careful observation, both at the bedside and at the dead-house, a theory of the origin, not of all pains, but of certain paroxysmal types of suffering associated especially with the vessels of the brain, the heart and the kidney, but to a lesser extent with those of the intestine and of the extremities. He supposes that arterial spasm (favored and prepared for by arteriosclerosis, by uremia, by lead-poisoning and by the nerve lesions of tabes) is the cause of a large group of pains, paralyses and other functional disturbances which had never before been brought together under any single explanation. Taking lead-poisoning as an impressive example of the theory, he points out that we have here a notable rise of blood-pressure, associated sometimes with cerebral crises (headaches, convulsions, coma), often with abdominal crises (lead colic) and occasionally with anginoid seizures. In arteriosclerosis we have likewise cerebral, abdominal and cardiac crises and, in addition to these, well-marked peripheral crises (intermittent claudication). In uremic and eclamptic poisoning we have likewise cerebral and abdominal crises. In tabes dorsalis the abdominal crises are the most familiar.

In all these affections post-mortem examination may demonstrate that there is no gross lesion, such as cerebral hemorrhage or thrombosis, coronary occlusion or blocking of a peripheral artery. Indeed, the arteries and the surrounding tissues may appear almost or quite normal post morten. It is natural, therefore, to assume some functional change such as spasm, to account for the pain, paralysis and other functional changes recognized at the bedside. In favor of the hypothesis of vascular spasm, or Gefässkrisen, are two considerations:

A rise of blood-pressure has many times been demonstrated by Pal before, as well as during, the crises. This hypertension cannot be accounted for as a result of pain, since in many of Pal's cases it preceded the pain. He has found it in the gastric crises of tabes, as well as in the uremic, saturnine and arteriosclerotic cases.

Ischemia should not be confounded with anemia; the one is local, the other general. Anemia is accompanied by known blood-changes, while ischemia occurs in subjects in whom there are no recognizable changes in the plasma or the blood-cells. To the surgeon, the subject is of interest and of importance, because of the proper interpretation of the symptoms, signs and consequences of the condition. Its interpretation determines to a certain extent the course the surgeon advises in the management of his case. It is because of the sometimes misleading character of pain, as a symptom, that attention is called to the subject at this time.

Two cases will serve to illustrate:

CASE 1.—T. P. K., aged 80, married, complains of pain in the left lower abdomen near the location of an inguinal hernia. The pain is sharp, comes suddenly, is at times much more severe than at others, and is not intermittent or periodic. With one exception, it has always occurred at night while the patient was lying in bed. It remains in the same location, always recurs in the same spot and does not radiate. The patient is occasionally nauseated but does not vomit, except after taking medicine, and then he vomits only the medicine. These attacks have occurred within three hours after eating a hearty dinner, but none of the dinner is vomited. With the first attack there was difficulty in getting a movement of the bowels. There was no movement for sixty hours at least. There was a great deal of gas present. During the last two or three attacks, shortly after the pain comes on there has been a tendency for the bowels to move, and in some cases there is a slight movement. There is no increase in the frequency of urination. Pain seems to pass from a point near the location of the rupture to the small of the back. Dizziness is not marked. There are increased thirst and nervousness.

CASE 2.—(Dr. Flansburg's case, illustrating intermittent claudication).—F. C., a traveling salesman, aged 53, has always been a heavy meat-eater. He uses alcohol moderately and smokes incessantly. He denies venereal infection. For the past two years he has suffered from "cramping pains" in the right foot and calf of the leg. After walking a distance of five or six city blocks he becomes aware of a dull aching pain in his leg, and if he continues to walk the pain becomes more and more severe until he is compelled to stop and sit down. After a minute's rest the pain disappears entirely and he is ready to walk five or six blocks more.

Most of us have been consulted as to the nature of transient pains occurring in almost every region of the body. Many patients complain of numbness and pain in the fingers, toes, legs, shoulders and chest, pains which are transient, but cause anxiety and discomfort.

Lead-eclampsia and nephritis have been mentioned as causing transient ischemia. Is it not reasonable to assume that many other toxic agents may act in the same manner? Those of us who have done many abdominal sections have noted a blanched and collapsed area of intestine sometimes many inches in length. I recently saw a young surgeon search the entire canal for the obstruction. It is more than probable that had

* Read before the Rock Island Surgical Association, Nov. 13, 1913, at Chicago.

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that patient suddenly awakened, he would have had a severe colic as a result of the ischemic condition present. It is probable that the ischemia is due to the direct action of a toxemia on the part involved, or on an altered efferent impulse which controls it. Recurring attacks predispose to recurring attacks, through oversensitization to the irritant which initiates the seizure, and the parts affected undergo nutritive degenerative changes which sometimes lead to gangrene, as in Raynaud's disease. In other cases there is apparently complete recovery.

Sir R. Douglas Fowell,[1] in an exhaustive article on angina pectoris, refers to circumscribed anginal attacks in various regions of the body, due to temporary spasticity of the vessels.

H. G. Turney,[2] in discussing the ischemic type of trophoneurosis, speaks as follows:

> The vasomotor instability which forms such a prominent feature of organic arterial disease may very closely simulate a pure neurosis, though on the other hand it should be remembered that prolonged disturbance of innervation will itself bring about changes in the walls of the vessels. When the patients are advanced in years, or even arrived at middle age, the presumption must always be on the side of arterial disease.

Sir Thomas Barlow,[3] in his summary of Raynaud's disease, says in part:

> In other groups of cases there is the possibility that the principal arteries of a limb may be normal so far as clinical investigation reveals, but that the smaller vessels may become affected with obliterative disease. There still remains a large number of cases (*a*) in which there are no areas of persistent anesthesia; (*b*) in which there is no localized atrophy of groups of muscles; (*c*) in which the symptoms are paroxysmal with a return to the normal state in the interparoxysmal periods; (*d*) in which there is no marked symmetry; (*e*) in which the arterial pulse, though narrowed during the attacks, becomes normal between the attacks; (*f*) in which the subjects are young and with no evidence of degenerative disease to which the title of Raynaud's disease is justly applied.

Hirschfelder[4] says:

> This condition is always associated with sclerosis of the femoral, popliteal or one of the other arteries of the leg, and claudication is simply part of the general arteriosclerosis.

Henry L. Akin[5] cites a number of cases which bear on this subject.

Kreuzfuchs[6] describes the symptoms of abdominal arteriosclerosis as paroxysmal pains in the stomach region or elsewhere in the abdomen, especially around the umbilicus, and tympany. The syndrome may be that of arteriosclerotic epigastralgia or true angina abdominis. In differentiation it is important that the attacks occur independently of the intake of food, but are elicited by the factors which experience has shown induce symptoms in heart and vascular affections. Another point is that the abdominal angina is most liable to develop when the patient reclines. It is more common in men than in women, and most of the patients are over 40 or 50 years of age. The diagnosis is confirmed by discovery of some other arteriosclerosis. A case reported by Brunton and Williams[7] concerns a patient, aged 63, who suffered from severe pain which came on when he began to walk. In this respect the pain resembled that of angina pectoris, but it differed in its position, as it was most severe in the umbilical region.

Frank F. D. Rickford[8] of Philadelphia reports two cases.

J. Ramsay Hunt[9] of New York has discussed the subject and reported a case.

It will be seen that the majority of authors associate transient ischemias with general arteriosclerosis, although some recognize what I believe to be the fact, that there are true localized ischemias dependent on transient localized conditions, and that during the attack there is marked pain in the parts involved.

Volkmann's ischemic paralysis belongs to the classification of cases included in this paper. The first stages of this surgically inflicted disease are those of a true ischemia later carried forward to post-mortem rigidity. We should not confuse the symptom group described first by Weir Mitchell, under the title "erythromelalgia," in which the changes are exactly opposite, with those noted in ischemia.

Considering the foregoing and summing up the case, as we must, on a theoretical basis, what rational conclusions may we reach? The subject divides itself into two phases: Is the cause of the positive signs and symptoms dependent on some irritant which acts on some part of the sympathetic nervous system, causing a circumscribed spasticity of the vessels under its control, or is it due to some change in the part involved? To me it appears most probable that both conditions may be and later on are present in all cases. In the most typical of all ischemic pains, angina pectoris, we have added a third condition which may also be present in all cases to a varying degree, namely, a general rise in blood-pressure; whatever the cause, the objective and the subjective phenomena are the same, a lowering of the blood-supply to the part, a lowering of the temperature of the part, because of reduction of the blood-supply, and pain, which in this condition is the call for oxygen, either from the musculature or from the nerves themselves, or from both. Who can say that the pain in an inflamed nerve may not be due to want of oxidation under conditions of infection? It is more than probable that some of these circumscribed ischemias have their origin in the part affected, as in the leg cramps of overexertion from walking, and the pain in the chest from mountain climbing, in which the muscle hunger is made more noticeable by a lessened supply of oxygen. The cramps of the swimmer are probably a circumscribed ischemia, made more certain by the reduced surface temperature. But are these manifest symptoms due wholly to reflex impulse through the centers, to some special internal secretion of the cells involved or to an altered hormone? Here we enter a field which, although much explored, has brought us but little information.

The studies on the effects of the various internal secretions made by such investigators as Pemberton

1. Powell, R. D.: In Allbutt and Rolleston's System of Medicine, vi, 157.
2. Turney, H. G.: In Allbutt and Rolleston's System of Medicine, vii, 84.
3. Barlow: In Allbutt and Rolleston's System of Medicine, vii, 145.
4. Hirschfelder: Disease of the Heart and Aorta, Ed. 2, p. 359.
5. Akin, Henry L.: Gastric Symptoms Consequent on Arteriosclerosis, THE JOURNAL A. M. A., June 5, 1909, p. 1825.
6. Kreuzfuchs, S.: Angina Abdominis, Deutsch. med. Wchnschr., 1910, XXXV, No. 7, abstr., THE JOURNAL A. M. A., March 26, 1910, p. 1094.
7. Brunton, Sir L., and Williams, W. E.: Case of Angina Abdominis, Lancet, London, April 6, 1912; abstr., THE JOURNAL A. M. A., May 4, 1912, p. 1400.
8. Rickford, F. F. D.: Intermittent Spinal Claudication, Am. Jour. Med. Sc., November, 1912.
9. Hunt, J. Ramsay: Lumbar Type of Intermittent Claudication, Am. Jour. Med. Sc., February, 1912; The Ischemic Lumbago, THE JOURNAL A. M. A., Feb. 28, 1914, p. 671.

and Sweet, Dean Lewis, Joseph L. Miller and a number of other investigators, lead to a probable conclusion that an alteration or a modification of these secretions may have a very positive effect in relation to these localized manifestations.

Up to the present no positive explanation has been given and no satisfactory theory advanced as to the cause of gastric ulcer, epilepsy and numerous positive and unpleasant things which confront us in our work. I am not going to assert, because I do not know, that gastric and duodenal ulcer may have their primary focus in a circumscribed ischemia which, recurring, as is the law with these phenomena, permits the digestive fluids to act on a partially devitalized area and further, by the lessened phagocytic powers due to the bloodless condition, permits increased bacterial activity. May not the convulsion of epilepsy be due to a transient, localized, circumscribed ischemia? It has been established beyond question that the pituitary gland in its posterior portion furnishes an active secretion which seems to have a selective action on muscle. This little body which we call gland has really no glandular structure. Its active colloid seems to come from its cellular elements alone. The active parts of the adrenals are not resident in the gland parenchyma, but in its infolded neurons. The correlation between the thyroid, the pancreas, the pituitary and the glands of the upper intestine have been worked out to a considerable extent, but so far as I know, no internal secretion has been isolated from the muscle-cell or from the cells of the axons of the mixed nerves. Yet it is but fair to infer that all the structural anatomic units of the body contribute to the body balance. As if is true in the development period, why not throughout the continuance of life, until the balance is disturbed by disease, or by injury in some other form?

My own belief is that these local manifestations are the effect of a disturbed metabolism, effected through the hormones of the body, and that the change finds its expression in the temporarily altered function of the part. There is such change in the part that a lesser degree of the exciting cause, whatever it may be, tends to a reproduction of the phenomena under constantly reduced resistance until relief is found in treatment, death from intercurrent disease or from such an altered condition of the part that local death ensues.

That the probable source is often local is shown by the prompt relief which is given by strictly local treatment; but that it may be initiated by some central influence is shown by the quick action of drugs which relieve the general tension, and also by the almost certain initiation of the trouble by substances which are toxic.

What influence may be played by the internal secretions on these phenomena has not been fully determined; but in analysis of the cases the influence of the adrenals, the pituitary and the other glands should not be forgotten, or the possibility that other glandular alterations or changes in the cell metabolism may initiate an attack.

Use should be made of those forces at our command which relieve vessel tension: the hot bath best of all, or hot applications over the painful area. In the cases reported, sodium nitrite and amyl nitrite seem to be of service and give prompt relief, if they do not have to be repeated too often. Opium is the ideal remedy; it relieves pain, quiets the nervous system, stimulates the heart and relieves the arterial spasm.

When the symptoms point to rare lesions which may require a serious operation, the possibilities of an ischemic pain should be borne in mind and eliminated by means of all the diagnostic material at command. We too often omit the leukocyte-count, the thermometer, the urinary findings (including the microscope) and the blood-pressure. We should not be in too much of a hurry. A diagnosis should be made if possible before operative measures are resorted to.

ETIOLOGY OF ARTHRITIS DEFORMANS

PRELIMINARY NOTE *

E. C. ROSENOW, M.D.
CHICAGO

The common presence of foci of infection, the history of previous infections, the occasional isolation of bacteria from the joints in chronic arthritis and the fixation of complement by certain bacteria in arthritis deformans (Hastings) suggest strongly the infectious character of this disease. The similarity, on the other hand, of the articular changes with those found in the nervous arthropathies, the associated dystrophies of the muscles, skin and nails, the symmetrical onset, the frequent involvement of nerve-trunks and the exacerbations following nervous shocks are commonly cited as indicating a neural origin. The chief objections to the infectious theory of arthritis deformans are that so many cases do not give a typical picture of infection and that no one thus far has isolated any organism from the tissues or joints in a considerable number of consecutive cases. Bacteriologic examination of the blood and of the articular exudate, when obtainable, usually has given negative results. It occurred to me that the lymph-glands draining the involved joints would be a good place to look for organisms, and this has been done in a considerable number of cases.

The glands are excised with strict aseptic precautions under local anesthesia, and cultures made at once, a portion of the gland being reserved for microscopic study. The part used for cultures is dipped into boiling water or passed through a Bunsen flame so as to sterilize the surface, rapidly cooled in sterile salt solution, emulsified in a specially devised sterile air-chamber[1] and inoculations made chiefly into tall columns of ascites-dextrose-agar. In this way organisms have been isolated from glands from all but three of thirty-eight cases of arthritis deformans, the duration of the disease ranging from two to seventeen years. Streptococci have been obtained in fourteen cases; a peculiar, streptococcus-like organism at first completely or partially anaerobic in nine cases; *Bacillus welchii* in nine cases; staphylococci in three; *B. mucosus* in one case, and the gonococcus in one case. In a number of glands several organisms have been found at the same time. In no instance have the streptococci been hemolytic for human blood. They resemble on isolation the usual *Streptococcus viridans* more than hemolytic streptococci, although only three strains produced green on blood-agar plates. There is often a marked difference between the type of organisms found in foci of infection such as the tonsil, and of those found in the glands (or joints). All the streptococcal forms isolated have shown

* From the Memorial Institute for Infectious Diseases.

1. The chamber in which this is done and the method of making the cultures is described in an article to appear in the Centralblatt für Bakteriologie, Parasitenkunde und Infectionskrankheiten.

a marked preference for anaerobic conditions of growth in the primary culture.

Positive results have been repeatedly obtained from glands only 5 mm. in diameter. The number of colonies have ranged from one to two thousand. The virulence of all the strains tested has been slight; when first isolated the streptococci show a marked affinity for joints and muscles and in some cases the lesions would parallel closely the condition found in the patient from whom the strain was isolated.

In some cases the same organism has been isolated at the same time from more or less widely separated regions, as epitrochlear and femoral glands, from gland and muscle or from gland, joint-fluid or joint capsule (six cases). Often the size of the gland draining the joints is apparently proportional to the degree of articular involvement. There is often great sensitiveness of the patient to injections of killed organisms (autogenous vaccine) isolated from the glands, and marked improvement may follow such injection. These facts, in conjunction with the affinity of the organisms for joints and muscles of dogs and rabbits after intravenous injections, would seem to leave little doubt that the bacteria found in the glands draining the joints in arthritis deformans are the actual cause of the disease. The full significance, however, of the presence of *B. welchii* in both glands and joints is not yet clear.

Microscopic sections of atrophic and often tender muscles and the thickened articular capsule in a number of these cases have shown a marked thickening and not infrequently a complete plugging of the blood-vessels, apparently not the result of organized thrombi but rather of a primary endothelial proliferation. Bacteria have been found in these areas of endothelial proliferation. In rabbits the exudate in the joints after intravenous injection and in the abdominal cavity after intraperitoneal injection usually shows a preponderance of endothelial cells. For these reasons the changes observed in the blood-vessels about the infected joints may be regarded as primary rather than secondary, and it would seem as if in arthritis deformans the micro-organisms are taken up from the circulation by the endothelial cells which proliferate freely so that eventually the blood-supply is reduced or cut off, in consequence of which there result areas of lowered oxygen tension, diminished nutrition and atrophy. Such conditions would favor the growth of organisms which on isolation are sensitive to oxygen. Clumps of bacteria, some of which have been found to be alive, have been observed within thick layers of old fibrous tissue in the capsule of joints in which there was no sign of recent inflammatory reaction. It may be recalled that Axhausen was able to produce the gross and microscopic changes peculiar to arthritis deformans by ligating the blood-vessels supplying the structure of certain joints in dogs.

The details of these experiments will appear in the *Journal of Infectious Diseases*.

I wish to express my appreciation to Dr. Frank Billings for the opportunity to study many patients under his care, and to the resident and attending staffs of the Presbyterian and Cook County hospitals and to the other physicians for their cooperation.

122 South Michigan Avenue.

A Point of View.—The doctor sees all the weakness of mankind, the lawyer all the wickedness, the theologian all the stupidity.—Schopenhauer.

FREE TRANSPLANTATION OF BONE INTO THE PHALANGES*

S. L. HAAS, M.D.
SAN FRANCISCO

In general, the small bones of the hand are subjected to the same diseases as are the larger bones of the body. Thus, we see acute and chronic osteomyelitis of the suppurative as well as of the tuberculous type; syphilis, especially in children, and tumors both benign and malignant. Any of these conditions may cause partial or complete destruction of the bone, and the resulting deformity and disturbance in function of the fingers may be of considerable importance. If, however, the patients are operated on in time and the defects remedied by some plastic method, the deformity can be lessened and a considerable amount of function maintained.

Various methods have been adopted to accomplish this purpose. The first methods consisted of using such materials as glass, ivory and metals to replace the removed piece of bone. In some the results have been good; but here as in other cases in which a foreign body is introduced into the tissues, there are many failures. Many varieties of bone transplants such as decalcified bone, dead bone from the same or different species, and living bone from the same or different species or individual have all been employed with varying degrees of success. The use of pieces of living bone from the same individual have proved to be the most satisfactory, especially if they are covered with periosteum.

Carl Timann[1] reports several cases of tuberculous osteomyelitis of the phalanges in which operation was performed by Mueller, who employed the following method: He first removed the diseased portion of the phalanx with its periosteum and then transplanted into the defect a piece of ulna which had its periosteum attached. He emphasized that in children it is important to have the transplanted bone longer than the excised portion. He was able to observe his cases from two months to two years after operation, and in six out of eight cases obtained good results. In one of his cases a successful transplant was made into the middle phalanx of the finger with good functional result, which is more difficult to obtain than in the basal phalanx.

The next important report is that of Schmieden,[2] working in Bier's clinic. He used practically the same method as Mueller with the exception that he took a piece of periosteal-covered bone from the tibia for his grafting material. He advocates the use of an extension apparatus for about fourteen days after the transplantation has been accomplished. He also advises that the periosteum extend beyond the edges of the transplant so that it may be more easily sewed in place. Iodoform powder is sprinkled into the wound. Schmieden calls attention to the inadvisability of doing plastic bone work in cases of general constitutional tuberculosis on account of the poor resistance of the patients. In one of his cases he first used a piece of tibia and then a piece of ox-bone without success. In a case of substitution in the basal phalanx of the big toe a tibia graft was successful. The insertion of a piece of ivory into the basal

* From Division of Surgery, Leland Stanford Junior University Department of Medicine.

1. Timann, Carl: Die Behandlung der Spina ventosa mittelst freier Autoplastik, Beitr. z. klin. Chir., 1902, xxxvi, 189.

2. Schmieden: Ueber plastischen Knochenersatz bei der Heilung der Spina ventosa und über der Enderfolge, Deutsch. Ztschr. f. Chir. 1904, lxxv, 302.

phalanx of the third finger failed, on account of recurring tuberculosis, the foreign body being thrown off. In another case he used macerated animal bone with good result. Although the results in his cases are not very satisfactory, they at least show the possibilities along this line. Although but few cases have been reported since that time, it is probable that there are many cases which have not been recorded.

Another method has been suggested by Bardenheuer in which a split phalanx or metacarpal is utilized according to a special technic.

PREVIOUS REPORTS OF CASES

CASE 1.—Thiel[3] reports a case from Bardenheuer's clinic as follows: A girl aged 12 showed a spina ventosa of the middle phalanx of the right index-finger which did not improve under conservative treatment but progressed to fistula formation. June 9, 1896, under ether anesthesia, after the application of an Esmarch bandage, an incision was made from the middle of the end phalanx to 1 cm. above the metacarpophalangeal joint. The fistula tract was excised and the entire diseased phalanx was removed; next the tendons were loosened up and the tissues surrounding the head of the first phalanx were cleared away. A wire was inserted through the phalanx near its end, after which a longitudinal piece was cut away from the side, leaving a small bridge of bone in the region of the wire. With the wire as an axis, this piece of bone was then turned over to occupy the gap left by the removal of the middle phalanx. The transplant was anchored to the terminal phalanx by means of a piece of wire. At the end of four weeks ankylosis took place at the first interphalangeal joint, but there was motion at the end joint and a good cosmetic result was obtained.

CASE 2.—Another case is reported by Stern[4] of a boy aged 4 with spina ventosa of the first phalanx of the right thumb. The child previously had a tuberculosis of other bones, and the phalanx of the thumb had been curetted. At the time of operation the thumb was swollen, red, and a fistula extended down to the bone. Nov. 16, 1897, an operation was performed in which the procedure was practically the same as employed in the preceding case, except that the incision was extended down to the first metacarpal and a part of that bone was transplanted. December 3, eighteen days after the operation, passive and active motion were begun and massage was given. An early good result was reported but the later course of the case was not given.

Recently another method has been presented which makes use of the substitution of the whole phalanx of the toe for a diseased phalanx of the finger.

CASE 3.—The first of these cases was reported by Wolff[5] in 1909. His patient was suffering from a spina ventosa of the basal phalanx of the fourth finger, which caused a considerable interference of motion. Under ether narcosis he removed the entire phalanx with some of the diseased tissue. He put in place of the removed phalanx the first phalanx of the second toe of the right foot, sewing it in with catgut. Into the defect of the foot he inserted a piece of cartilage from the sixth rib. At the end of one week he began both passive and active motion. He reported a useful joint after a lapse of one year and eight months.

CASE 4.—W. Goebel[6] reports a case of enchondroma of the first and second phalanges of the left fourth finger in a boy aged 16, in which he carried out the following procedure: He removed the entire first phalanx and substituted a phalanx with its periosteum from the second toe. The defect in the toe was filled with a piece of cartilage from the sixth rib. The day after the operation he began systematic motion. Five weeks later he removed with curet the rest of the enchondroma, which had involved the other two phalanges. The end-result was fairly good except that the patient could not completely close the fist. Goebel calls attention to the fact that function seems to exert some influence on the success of the transplantation, and he emphasizes the importance of beginning movements as early as possible.

Shortly following Goebel's article, R. Sievers[7] reported a case of cystic sarcoma of the middle phalanx of the left ring-finger in which he used a method similar to that described by Goebel. Under local anesthesia the basal phalanx of the fourth left toe was substituted for the diseased phalanx of the finger, and the defect in the toe was filled with a piece from the tibia. He began early motion and obtained good functional and fairly good cosmetic result, although there was partial inability to extend and flex the fingers.

The question naturally arises as to the permanency of entire phalanx transplants which are not directly in contact with periosteal free bone. Murphy[8] reports the entire disappearance within fourteen months of a phalanx which he had transplanted to restore the bridge of the nose. This he ascribes to the absence of direct contact of bone with bone. In Goebel's case after the lapse of one year, and in Wolff's case after one year and eight months no evidence of degeneration in the transplanted phalanx was noticed. It is possible that, as Goebel has stated, the influence of function is the determining factor in the latter transplantations, a factor which was entirely lacking in Murphy's case.

The removal of the phalanx from the toe does not disturb the function of the foot; but it is advisable to make use of the second or fourth toe.

Through the courtesy of Professor Stillman, I have had the privilege of operating in two cases of diseased phalanges that appeared for treatment in the surgical clinic of the Stanford University medical school.

REPORT OF AUTHOR'S CASES

CASE 1.—D. G., woman aged 23, came to the clinic Sept. 11, 1912, complaining of a swollen and painful left ring-finger. There was no family or personal history of tuberculosis and no history or evidence of syphilis either congenital or acquired. On examination there was a swelling that involved the entire first phalanx and part of the second. Motion of the interphalangeal joints was painful and restricted. Pressure over the basal phalanx caused pain. The Wassermann test and the von Pirquet reaction were negative. Roentgenoscopy revealed an involvement of the first phalanx which was probably tuberculosis. The patient was given the routine treatment for such conditions. She was advised to remain as much as possible in the fresh air and to take good nourishing food. A removable splint was applied to the hand so as to keep the part at rest and at the same time to allow for exposure to the sunlight. The Bier bandage was applied daily and the patient was given potassium iodid at the same time. A regular course of tuberculin injections was also given. The application of a 10 per cent. pyrogallol salve was tried, but it produced such severe blistering that it had to be discontinued. After six months of treatment no improvement in the patient's condition was observed; in fact, as shown by the roentgenogram, the disease had extended through the periosteum (Fig. 1).

Operation.—March 9, 1913, under ether anesthesia, an incision was made on the side of the basal phalanx just below the dorsal surface down to the membranous tendon of the extensor

3. Thiel: Osteoplastischer Ersatz einer Phalanx nach Exartikulation derselben wegen Spina ventosa, Centralbl. f. Chir., 1896, xxiii, 833.

4. Stern, C.: Ersatz einer exartikulirten Phalanx durch Osteoplastik, Centralbl. f. Chir., 1897, xxiv, 178.

5. Wolff, H.: Auswechselung von Finger- und Zehenknochen (Beitrag zur Autoplastik), München. med. Wchnschr., 1911, lviii, 578.

6. Goebel, W.: Ersatz von Finger und Zehenphalangen, München. med. Wchnschr., 1913, lx, 356.

7. Sievers, R.: Freier autoplastischer Phalangentausch in einem Fall von Riesenzellsarkom der Mittelphalanx des linken Ringfingers, Beitr. z. klin. Chir., 1913, lxxxv.

8. Murphy, J. B.: Contribution to the Surgery of Bones, Joints and Tendons, THE JOURNAL A. M. A., April 6, 1912, p. 990.

communis digitorum. The latter was retracted dorsally and the periosteum was separated from the bone. This diseased bone, a part of the healthy bone and the involved parts of the sheaths of the flexor tendons were removed. Next, a piece of bone from the tibia with its periosteum was inserted into the gap in the phalanx. (In removing the tibia graft it is advisable to use a new set of instruments so as to eliminate the chances of transferring the original infection to the healthy bone.) The removed piece of the tibia was slightly longer than the removed part of the phalanx, but this is not advisable except in growing persons. No attempt was made to remove any blood or to check any slight bleeding, as the blood stimulates the regenerative properties of bone. The periosteum was approximated with interrupted catgut sutures, as were the other layers and the skin. Extension was applied to the finger for three weeks, and at the end of five weeks both active and passive motion were commenced. The cosmetic result was very good (Fig. 4), but owing to the limited amount of flexion the function is poor, which is possibly due to the late institution of motion, the extensive involvement of the tendon sheaths and the fact that the transplant was too long.

Fig. 1.—Condition of finger in Case 1 before operation, showing outline of the swelling and extension of the disease through the periosteum.

Fig. 2.—Case 1, two weeks after operation.

Fig. 3.—Case 1, three months after operation. Increase of periosteal growth. Notice the lack of growth at the distal segment.

CASE 2.—A. L., boy aged 3, was brought to the clinic by the mother, who stated that he fell a few days previously and hurt his finger. There was no family or personal history of tuberculosis. Examination showed a spindle-shaped swelling of the third finger of the left hand, and pressure over the swollen part caused pain. Motion both passive and active was restricted and painful. Roentgenoscopy revealed a rarefaction at the distal end of the first phalanx of the third finger. The Wassermann reaction was negative. The finger was put into a splint to keep it at rest, the Bier bandage was applied daily, and potassium iodid was given internally. After one and one-half months' treatment the Roentgen ray showed a progression of the lesion, and an operation was advised (Fig. 6).

Operation.—Aug. 4, 1913, under ether anesthesia a similar method to that described in Case 1 was carried out. The finger was kept in extension for three weeks, and one week later both passive and active motion were started. The functional result was such that after three months both flexion and extension were almost normal. Aside from a slight bend the finger appeared practically normal (Fig. 10). No definite diagnosis of tuberculosis could be made in this case as the microscopic examination of the removed tissue showed nothing but granulation tissue.

A short study of the roentgenograms may prove of interest. Here we have two cases, one in a child of 3 in the active growing period, and the other in a young woman of 23 who has just passed the time of active growth. As one would expect and as is demonstrated by the roentgenograms, the rapidity of bone regeneration is greater in the younger of the two persons (Figs. 3 and 8). One must take into consideration that the process was more advanced in the older patient and that it was necessary to remove more of the periosteum; but even if there had been an equal involvement of bone and periosteum in the two cases, the regeneration would still be more rapid in the younger. Roentgenograms were taken at intervals of about two weeks from the operation in order to determine the part that the original phalanx, the remaining periosteum and the transplanted piece of tibia with its periosteum played in the regenerative process. The most striking fact is the inactive part that the transplant seems to take in the regeneration. This is best made out in Case 1, as at no time is there any evidence of sprouting of bone from its surface or increase in the thickness of the graft. It is probable, however, that the graft has remained alive since the density does not seem to alter at any stage. In Case 2 there is considerable evidence that the remaining periosteum takes an active part in the regeneration, as the new bone is most marked under the peri-

Fig 4.—Result in Case 1 four months after operation. Compare with Figure 1, which shows the outline of the finger before operation.

Fig. 5.—Case 1, eight months after operation. Welding of transplant with the phalanx.

osteum (Fig. 8). In Case 1 (Fig. 3) one sees that at the place where the proximal segment of the original phalanx joins the transplant there is growth of bone along the edges, while the central area remains free. This must be interpreted as growth from the periosteum or from that part of the cortex immediately beneath the periosteum. There is very little bone regeneration from the small distal segment of the original phalanx. It is

Fig. 6.—Case 2 before operation, showing involvement of distal end of the first phalanx of the third finger.

possible that this is due to the fact that there was considerable disturbance to the nutrition of this part as well as the periosteum; but it shows that there must be other factors present than cortical bone in order to have regeneration (Figs. 3 and 8). The later plates (Figs. 5 and 9) show the gradual welding of the transplant with the original bone and restoration of the symmetry of the phalanx.

The study of regenerative processes in bone by means of the Roentgen ray might lead one to erroneous conclusions. It must be remembered that the Roentgen ray does not show periosteum that is free of calcareous deposit or very young bone, and in making deductions from the roentgenograms we must bear these facts in mind. We must rely on the microscopic preparations for the more accurate knowledge of the early changes that take place in cases of transplantation.

Fig. 7.—Case 2, one week after operation.

Fig. 8.—Case 2, one month after operation, showing periosteal bone growth.

Fig. 9.—Case 2, three months after operation.

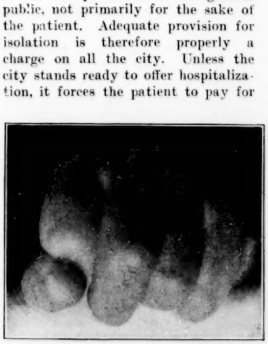

Fig. 10.—Flexion in Case 2 four months after operation.

The question arises as to which is the preferable method of those enumerated. The number of reported cases is too few to decide that matter at present, but it seems that under certain conditions each has its application. As to the ease of the operation, the exponents of each make the same claim for their respective method. To me it seems that the removal of the whole phalanx and the substitution of another is a much more formidable procedure than a partial resection. It does not appear advisable to disturb the normal joint if it can be avoided, although the results obtained in the reported cases seem to indicate that it makes but little difference. In the case of a very young person the transplantation of a whole phalanx would raise the question whether or not this phalanx would continue to grow longer after it had been transplanted. The normal length of the phalanx of the toe is less than that of the finger; consequently if it did grow to its normal length, would there still be the stimulus for additional growth so as to equal the normal length of the finger phalanx? This also brings up the question of the transplantability of the epiphysis, a subject that has not up to the present been fully and satisfactorily investigated. It is to be hoped that further reports may add something to this very interesting side of the question. It certainly would be safer in a very young person to allow the epiphysis to remain intact and to make use of a small transplant instead of a whole phalanx; but if the epiphysis is destroyed, it might be better to try a whole phalangeal transplantation. The latter method would be indicated in case of tumors, especially if these tend toward malignancy.

From the reports of other cases a more definite conclusion can be formed as to which method is preferable, and answers to some of the problems of bone transplantation supplied.

I wish to express my thanks to Professor Stillman for the privilege of operating in these cases and reporting them.

210 Post Street.

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Duty of a City as to Infectious Diseases.—The city isolates cases of contagious disease for the protection of the general public, not primarily for the sake of the patient. Adequate provision for isolation is therefore properly a charge on all the city. Unless the city stands ready to offer hospitalization, it forces the patient to pay for the protection of the public. In effect, it adds a fine to a misfortune, and adds it especially in those families in which the misfortune alone rises to the dignity of a calamity. The duty of the city is plain. It must provide adequate hospital accommodations for at least the more severe contagious diseases.—*Bulletin Chicago School of Sanitary Instruction.*

THE TONGUE AND UPPER ALIMENTARY TRACT IN PELLAGRA *

THOMPSON FRAZER, M.S., M.D.
ASHEVILLE, N. C.

The diagnosis of pellagra is not infrequently fraught with difficulty for two reasons: In the first place, the disease is remarkable for its behavior with reference to seasonal variations, and the remission or decrease of symptoms during the colder months of the year is very apt to lead one astray. In the second place, pellagra is very irregular in its manifestations; it is a long-drawn-out disease, as a rule, requiring months or even years for the development of such symptoms as we have been wont to consider characteristic. When the pellagrous triad of dermatitis, nervousness and diarrhea is present, the diagnosis is of course readily made; but if the skin changes are slight, with an indefinite history of an eruption, if the nervous symptoms are not prominent, and if there has been but moderate diarrhea or perhaps none, the diagnosis may be attended with considerable difficulty. For the symptoms on the part of the various systems—the skin, the nervous system, and the gastro-intestinal tract—do not usually develop at the same time, and the very name of the disease, emphasizing, as it does, one feature alone, is apt to make one base his diagnosis on the least important of all symptoms—the dermatitis. I say "least important," because a transient sunburn-like erythema may be easily forgotten by the patient, while the subsequent skin changes may be so slight that they may quite readily escape detection by the physician. Again, much valuable time is lost if one's diagnosis depends on the dermatitis alone, for this symptom is not usually the first to appear.

It is unfortunate that one symptom should have been singled out to designate the disease, and it is important that we learn to recognize other symptoms, which may enable us to diagnose pellagra between "attacks," or the history of which may lead us to suspect a previous "attack." In the front rank of such symptoms stands diarrhea. Occurring, commonly, as a part of the spring or summer "attack" and in some instances persisting throughout the year, it should be regarded, in pellagrous areas, with suspicion. Sometimes, however, the most careful questioning will not disclose any previous attacks of looseness of the bowels. I have seen cases in which there was indisputable evidence of pellagra—cases in which there were nervous symptoms of the most pronounced kind, in which there were contractures of the thigh muscles, and in which the skin of the hands and forearms showed trophic changes, such as shininess and pigmentation—I have seen such cases in which diarrhea had either not been present or had been of so mild a nature as entirely to have escaped the memory of the patient.

In the absence of diarrhea, pellagra may still betray itself by other symptoms referable to the gastro-enteric tract, especially in its upper portions; and these symptoms are of significance in that they not uncommonly persist during the colder months, and also because they are among the first to appear, foreshadowing, frequently, both the diarrhea and the dermatitis. The chief subjective symptoms are loss of appetite, "dyspepsia," pyrosis, and sore mouth.

* Read at a meeting of the Tri-State Society held at Wilmington, N. C., Feb. 18-19, 1914.

Loss of appetite is very common. It may be present in the spring, or summer, or fall alone, initiating an attack of pellagra, or it may be almost continuous—though less prominent—throughout the year. There may be diminished appetite for months or even for a year or two before the advent of more characteristic symptoms. In some instances the appetite is capricious, it comes and goes without reference to the seasons. Some pellagrins say that they can eat but that they do not enjoy it—"my food doesn't taste right" is an expression I have heard many times. Others retain their appetites but are afraid to eat much on account of the discomfort on swallowing, or on account of gastralgia or dyspepsia, although the latter symptoms do not usually bear any relation to the taking of food. One patient with sore mouth and pain on swallowing nevertheless retained her appetite; another, an old man who had suffered for several years with pyrosis and abdominal distention, said that his appetite had never been better. I have had pellagrins say that they could

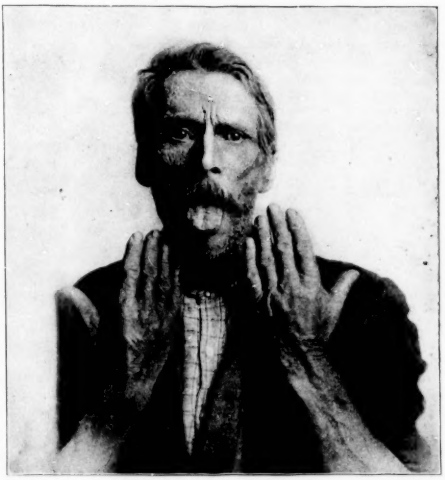

Fig. 1.—Tongue fissured in the center and bare of epithelium at the margins.

not get enough to eat. As a rule, however, the appetite is diminished during the attack, and frequently is not quite up to normal during the seasonal intermissions.

The symptoms included under the term "dyspepsia" may conveniently be considered here, although they should not, perhaps, be attributed entirely to the upper part of the digestive system. They are nausea, gastric pain, pyrosis, distention and belching. Nausea in some degree is present in most of my cases, usually constituting one of the prodromal symptoms of each recurrent attack. Regurgitation of food is not uncommon and may continue throughout the year. Actual vomiting, in my cases, has taken place only at the outset, with the exception of one case in which it was most persistent.

Some measure of pain or discomfort occurs in practically all cases of pellagra. It may be a severe but transient gastralgia, or it may be more of an aching

or dragging sensation described as a "misery" or "hurting." In either case it does not seem to depend on the taking of food.

The pyrosis is perhaps the most constant cause of complaint. In some instances it is limited to a single attack, in others it persists with variable intensity for years, constituting one of the most annoying symptoms of the disease. One patient described the sensation as "a ball of fire rolled up in my stomach"; another said: "My stomach acts like it's skinned." Most pellagrins do not find this symptom aggravated by eating; a few, however, think that certain articles, such as vinegar, pork, and greasy substances, do increase the burning.

Distention of the abdomen and belching are frequent complaints; there is often a sensation as of a lump in the stomach. At times there may be difficulty in swallowing, with choking and "smothering" sensations. These are the chief subjective symptoms which the pellagrin sums up as "dyspepsia" or "indigestion." Characteristic as they are, they do not compare in importance with the symptoms referable to the mouth, which give not only subjective, but objective evidence as well, of the presence of pellagra.

The history of a stomatitis occurring in the spring or summer, lasting a week or two, recurring perhaps the following year, is commonly encountered. There

Fig. 2.—Diagrams indicating *A*, tongue bare of epithelium save for small area in center; *B*, tongue bare save for two small symmetrical strips; *C*, slight fissuring on the tip; *D*, more marked fissuring.

are few who do not remember the sore mouth; or it may be the sore mouth that brings the pellagrin to the physician. If seen at this time the lips are dry and may be cracked; the complaint is made that they burn and that the whole mouth feels as if it were scalded. Eating and drinking are painful. Even before the appearance of the skin erythema there are signs in the mouth which indicate an attack. The whole mucous membrane appears unduly red. There may be aphthae on the gums and on the inside of the cheek. They are more persistent than ordinary aphthae and do not respond as well to treatment with silver nitrate. The gums are tender; in one case there was a history of bleeding gums. While the saliva is usually increased, I have noted excessive secretion in one case only, in which the association of ptyalism and stomatitis with aphthae presented a picture which closely resembled mercurial salivation. The sore mouth does not usually last over two or possibly three weeks and between the attacks there is nothing characteristic about the gums. The tongue, however, affords us much information not only during the outbreak, but also during the less active periods of the disease.

There are several things to be noted about the tongue. If examined just before the outbreak it may present the appearance of a normally coated tongue. Very often, however, a more careful scrutiny will reveal the presence of papillae on the tip and anterior portion of the tongue, peeping through the coat, as it were; this is the "stippled" tongue, as it has been called. This injection of the papillae is sometimes seen in the intermissions as well. An enlarged tongue is not uncommon. But the characteristic feature of the pellagrous tongue is the shedding of the epithelium so that the organ looks smoother, cleaner and very red.

This shedding of the lingual epithelium takes place in varying degrees. In the beginning it is seen at the tip and sides of the tongue. More marked denudation leaves only a small central coated strip or two narrow symmetrical areas on each side of the long axis of the tongue. When the tongue is completely stripped we have the appearance variously described as the bald, beet, beefy, raw, and cardinal tongue. The shedding of the epithelium is most marked during the outbreak; between attacks it tends to be replaced. I say "tends" because so often the regeneration of the lingual epithelium is incomplete and the tongue presents a neat, well-groomed appearance rather than the coated, somewhat dirty-looking surface which is the normal. The tendency to regeneration is seen most often on the central part of the dorsum, the tip and margins of the tongue often remaining denuded or with but a scanty epithelial covering.

I have said that the tongue of pellagra is very red. Occasionally one sees a tongue — smooth and slimy-looking and undoubtedly pellagrous—which is quite pale. I have seen tongues which had a cyanotic hue.

I have found tremor of the tongue as it is extended to be a quite common symptom, nor is it limited to the attack. In some cases the movements are so irregular that "tremor" does not describe them, different portions of the tongue contracting without any definite program, in the nature of a convulsion. A sharply pointed tongue I have seen in a few instances, but more often, perhaps, one sees a swollen, thick and fissured tongue, while ulcers at the margins occur in a considerable number during the outbreak.

The fissured tongue is a great aid in the diagnosis of pellagra. Fissures may be noticed during the attack, situated along the medial fold and limited to the anterior portion of the tongue, or radiating from this fold in all directions. In my experience those in whom the disease has existed for some time—several years—present the greatest amount of fissuring. These fissures may be longitudinal, extending a considerable part of the length of the tongue, or they may be transverse, crossing the central fold and at right angles to the long axis of the tongue. They may be superficial, few in number and limited to the central portion of the tongue, or they may be so numerous and extensive that they corrugate the surface of the tongue so that it resembles the skin of the scrotum when cold.

Now I do not think that every tongue with fissures is a pellagrous tongue. Since I have been paying especial attention to the appearance of tongues I have noted many with fissures of various degrees of size and depth which I could not with the greatest stretch of the imagination attribute to pellagra. But I do maintain that one should always be on the lookout for the fissured tongue and that the association of fissure with enlargement, tremulousness, and partial or complete epithelial denudation of the tongue is sufficient to justify one in suspecting pellagra as the most probable cause of the condition.

I have endeavored, in this brief paper, to present what have seemed to me the most important symptoms on the

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part of the upper alimentary tract. Their significance lies in the fact that many of them endure throughout the year: and if due attention be paid to them one may, not infrequently, hazard a diagnosis of pellagra in the absence of what are usually considered more characteristic symptoms.

THE BACILLUS AEROGENES CAPSULATUS IN BLOOD-CULTURES WITH RECOVERIES *

ALBERT HOWARD BAUGHER, M.D.
CHICAGO

The purpose of this paper is to report four cases in which the *Bacillus aerogenes capsulatus* was obtained in blood-culture during life, and to call attention to this means as a valuable method of diagnosis. Since the discovery of this organism there seems to have been no doubt that it invaded the general blood-stream at or shortly before death, as is evidenced by its generalized presence at necropsy in patients dying from this infection. Welch and Nuttall[1] made this observation and called attention to it in their early report. Notwithstanding this report and the suggestion that it carried, only a few of the many observers of this organism have reported positive blood-cultures due to it, and so far as I have been able to find, there has been no recovery reported, when a positive culture was obtained.

In my series of four cases, three patients recovered and one died; but in no instance did operation or death occur prior to the reporting of the positive blood-culture.

In 1896 Flexner,[2] in his study on terminal infections, said that there was evidence of the distribution of the bacilli within the body during life, but that he was reluctant to admit of a general invasion of the blood and tissue before death, as the maintenance of life for any length of time after the organism had established itself in the blood and produced gas there was probably impossible; but Gwyn,[3] in 1899, having repeatedly recovered the organisms from a patient during a space of thirteen days, thought that it was impossible for gas to be formed in the circulating blood, and Cole,[4] in 1902, confirmed this observation. These data seemed to prove quite conclusively that gas was not formed in large quantities, at least during life, and this conclusion has not yet been disproved so far as I am aware.

Following is a brief review of the instances recorded in which positive blood-cultures have been obtained:

Gwyn,[3] in 1899, recovered this organism on three different occasions from the blood of a patient with a clinical diagnosis of chorea insaniens. The first culture was obtained thirteen days before death, and in the third the streptococcus was associated. Acute endocarditis was now added to the diagnosis.

Cole,[4] in 1902, obtained the organism from the blood three hours before the death of a man who had had both legs crushed two days previously. He used 8 c.c. of blood, 1 c.c. of which was injected into the ear-vein of a rabbit, and the remainder divided equally between twelve tubes of litmus milk. Both the rabbit and the culture-mediums gave a positive result.

Schiedler,[5] in 1909, attempted a culture in a post-partum case, but with negative results both aerobically and anaerobically.

Rhea and Young,[6] in 1909, reported two cases of infection due to *B. aerogenes capsulatus* following abortions, one of which gave a positive blood-culture eighteen hours before death.

Libman[7] attempted to cultivate this organism from the blood of a patient with gall-bladder infection, both by cultures and by inoculating a rabbit, but with negative results.

Hewitt,[8] in 1911, reported ten cases of gas bacillus infection in which he obtained four positive blood-cultures; but he does not state the time at which these cultures were taken in regard to the time of death of the patients, all four of whom died, one twelve hours after admission, the second fifty-eight, the third seventy-two, and the fourth ninety-six hours. Since it is generally conceded that the incubation period of this organism is forty-eight hours, none of his cultures could have been taken more than two days before death, and it is more probable that they were taken on the day of death.

The essential facts of the cases which I wish to report are as follows:

CASE 1.—Man, aged 51, contractor, was seen in consultation by Dr. L. L. McArthur, on whose service he entered the hospital, May 16, 1912. He took sick rather suddenly three weeks previously with severe cramp-like pains in the region of the gall-bladder. The pain radiated to the right shoulder and downward. This attack lasted two hours. There was no nausea or vomiting at this time or in the subsequent history. The patient does not know whether he had rise of temperature or not, but says that he was distinctly tender over the gall-bladder and in the epigastrium. This tenderness never disappeared entirely, but there were no more severe or sudden attacks or pain. He gave no history of constipation, jaundice, venereal disease or other illness.

When the patient entered the hospital the temperature was 103.4, pulse 96, and respiration 28. Tenderness was noted over a palpable mass in the region of the gall-bladder and epigastrium, with some rigidity. The abdomen was slightly distended. The leukocyte count was 8,050.

The patient was kept under observation for a week. At times during this period he was irrational and delirious, and his temperature oscillated between 99 and 102.4. He did not experience much pain but was restless. His mental condition in regard to his own feelings was that of a state of "well-being." A slight jaundice developed during this week of observation, and for this reason the blood-culture was suggested. The stools were normal except that blood was found on one examination. The leukocyte-count rose to 12,500, with 85 per cent. polymorphonuclears. The blood-culture was made five days before the operation and yielded the *B. aerogenes capsulatus* and the *B. mucosus capsulatus*. The operation revealed a ruptured gall-bladder with about two-thirds of the fundus gangrenous, a large abscess beneath the liver containing thick, yellowish, bile-stained pus, and two pea-sized gall-stones. The pus had a very foul odor and smears revealed the same organisms as found in the blood, and in addition a small Gram-negative bacillus, a fusiform bacillus and cocci. The patient recovered.

CASE 2.—Man, aged 40, American, was seen in consultation with Dr. Edwin Tuteur, Feb. 2, 1913, at Henrotin Hospital, at which time a positive blood-culture was obtained. The

* From the Pathological Laboratory of St. Luke's Hospital.
* Read before the Chicago Pathological Society, Feb. 9, 1914.
1. Welch and Nuttall: Bull. Johns Hopkins Hosp., 1892, iii, 81.
2. Flexner, Simon: Jour. Exper. Med., 1896, i, 559.
3. Gwyn, N. B.: Bull. Johns Hopkins Hosp., 1899, x, 134.
4. Cole: Bull. Johns Hopkins Hosp., 1902, xiii, 234.
5. Schiedler, F.: Monatschr. f. Geburtsh. u. Gynäk., 1909, xxx, 714.
6. Young, E. B., and Rhea, Z. J.: Boston Med. and Surg. Jour., 1909, clx, 401.
7. Libman, E.: Bull. Johns Hopkins Hosp., 1906, xvii, 215.
8. Hewitt, W. R.: Bacillus Aerogenes Capsulatus Infections, with Report of Ten Cases, THE JOURNAL A. M. A., April 1, 1911, p. 1059.

patient had been sick for five weeks with high fever, and six days previously had been operated on for cholecystitis, and drainage established. The drainage-tube was removed on the second day following the operation and the wound was allowed to close, although the patient's condition was growing more serious all the time. The report of the positive culture was given at the end of twenty hours. On February 4, I was given permission to probe the wound, at which time a serous discharge, pus-cells, bile and the *B. aerogenes capsulatus*, along with a few other organisms, were found. The patient continued to grow worse, although drainage was reestablished in the wound. From February 18 to February 21 the patient experienced severe griping pains in the bowels, and passed large yellow stools with some blood and mucus.

February 18, Dr. A. E. Halstead saw the patient in consultation with Dr. Tuteur and Dr. McQuinn and advised a second laparotomy. February 21, the patient was transferred to St. Luke's Hospital where he was operated on by Dr. Halstead, February 22. Many adhesions were found in the region of the gall-bladder, and the anterior wall of the stomach and pylorus was greatly thickened. The scar and fistula were removed and drainage established. The discharge was very free following the operation, and on February 28 was slightly acid, but did not give the silver nitrate test for hydrochloric acid. A later test, February 26, however, showed the discharge to be 10 degrees acid. February 27, it was 18 degrees acid and a white precipitate formed on adding silver nitrate. The diagnosis of a gastric fistula was now made, and the *B. aerogenes capsulatus* was still present in smears made from the discharge. The patient presented a hazardous condition for some time, but recovered. The fistula, though nearly closed, was present when the patient was discharged, March 26, 1913.

CASE 3.—Man, aged 30, was admitted to the service of Dr. Frankenstein, May 15, 1913, complaining of sharp, cutting and continuous pain in the right chest. The pain was such that he could not lie down with comfort. The present trouble started four weeks before, on which date in another hospital he had a fistula leading to the gall-bladder region curetted. On the same day he started for Chicago, but became violently sick on the train and had to stop in a small town for one week before he was able to leave, and on reaching here was treated for two weeks for pneumonia before entering the hospital.

A fluoroscopic examination by Dr. Case at St. Luke's Hospital, May 16, in standing position, showed the right chest to be filled with fluid to within 1½ inches of the apex of the cavity. Aspiration, however, on the same day did not permit any fluid to escape, but on the end of the trocar was a drop of bloody pus, which in smears revealed a small Gram-negative, a fusiform bacillus, and the *B. aerogenes capsulatus*. May 17, a positive blood-culture was obtained which was reported the following day. Exactly two days after the blood was taken for the culture, a rib was resected, which allowed a large amount of pus to escape. The leukocyte count previous to operation ranged around 16,000, with 90 per cent. polymorphonuclears. The patient recovered.

The patient in giving his history stated that he had had three operations previous to the curetting mentioned above, the first being two and a half years before to drain an appendiceal abscess, another to remove the appendix, and the third to remove the remaining stump of the appendix.

CASE 4.—Man, Italian, aged 20; on the night of May 26, was shot with a rifle through the lower end of the thigh, causing a compound fracture of the femur. The wound was dressed by a physician who put a through-and-through drain in the channel made by the bullet. Forty-eight hours after the accident the patient was admitted to the service of Dr. L. L. McArthur at St. Luke's Hospital. Immediate amputation was advised notwithstanding the great sepsis of the patient. This was refused. The condition of the patient aside from being very septic when admitted was also very dirty and unkempt. Fecal matter was found on the dressings and on his clothing. The wound was exuding a bloody serum, and crepitation could be elicited around it. The leg was beginning to become gangrenous. The dressing and drainage material had not been changed since being applied. Ten hours after admission blood was taken for a culture, of which 5 c.c. gave a luxuriant growth of the *B. aerogenes capsulatus* by the following morning.

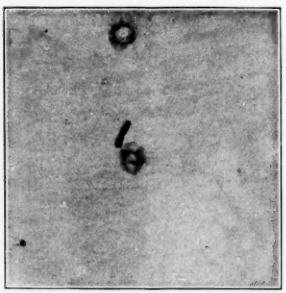

Fig. 1.—*Bacillus aerogenes capsulatus* from bouillon blood-culture; × 1,200.

Fig. 2.—*Bacillus aerogenes capsulatus* from pus of fistula, Case 2; × 1,200.

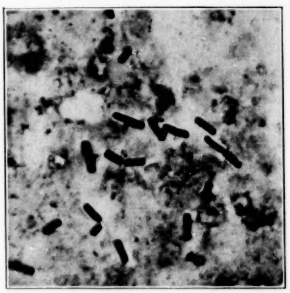

Fig. 3.—*Bacillus aerogenes capsulatus* from heart's blood of rabbit; × 1,200.

In this case the blood was taken twenty-six hours before the patient died and was reported on twelve hours prior to death, on which day the leg was definitely gangrenous, gas could be expelled from the wound in large quantities, and distinct crepitation could be felt over the entire leg, thigh, and from the abdomen to the navel. The patient was not jaundiced before death, but immediately afterward a slight hemolytic tint was observed on the skin. The sclerae were clear. Death occurred three and a half days after the injury.

Each blood-culture was made from about 10 c.c. of blood, which was divided about equally between two flasks, each containing approximately 50 c.c. of broth. Both plain and glucose broth were used. In two cases I failed to receive a growth except in the flasks containing glucose. In Case 4, in order to make more certain as to whether or not the blood contained the organisms at the time of examination, 5 c.c. of blood were defibrinated, and 3 c.c. of the defibrinated serum and corpuscles injected into the ear-vein of a rabbit. The rabbit showed the characteristic findings due to this organism at the same time that the blood-culture was reported.

The cultures were pure, except in the instance in which the *B. mucosus capsulatus* was associated. No attempt was made to secure anaerobic conditions other

than that which the depth of the medium afforded. Smears from the bottom of the flasks showed the organisms in small numbers and usually in pairs. A chain was rarely found as is characteristic in pus. Hemolysis occurred in all the flasks that contained the organisms, and in the flasks containing glucose, bubbles of gas were adherent to the sides of the flask, and occasionally they could be seen to rise to the surface of the broth. Capsules were demonstrated with difficulty in the organisms from the flask.

To prove the identity of the bacillus, rabbits were injected in the ear-vein with 3 c.c. of the blood-culture medium from each of the four cultures and killed within a few minutes. They exhibited the typical findings due to the *B. aerogenes capsulatus* after being incubated for eighteen hours. Smears from the various organs and heart's blood demonstrated that the bacillus was encapsulated, as did also the smears from the original pus.

The purpose of this paper is not to prove whether or not this organism is capable of multiplying in the circulating blood, or to call attention to its wide distribution in wounds and other pathologic conditions, but to show that it is possible to demonstrate this organism by means of blood-cultures in severe cases of infection due to it, and yet obtain recovery when proper surgical treatment is instituted.

6233 Ingleside Avenue.

ISOLATED DISEASE OF THE SCAPHOID

FRED J. FASSETT, M.D.
SEATTLE, WASH.

A condition described as isolated disease of the scaphoid, or Koehler's disease is occasionally reported. In a recent paper[1] it is stated that only eight cases have been described since 1908. Therefore, the following cases, which appear to be true to this type, might well be placed on record.

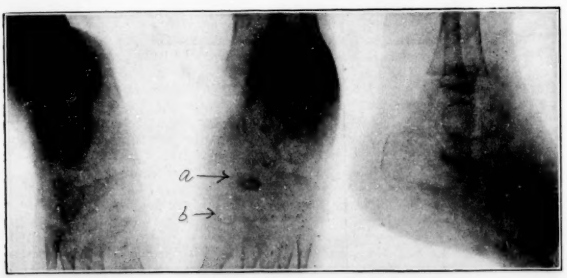

Fig. 1.—Case 1: Note increased density and diminished size of shadow of scaphoid on right (*a*) compared with left and relative atrophy of the bones adjacent to scaphoid on right (*b*). Also, dense scaphoid shadow in lateral view.

CASE 1.—H. H., girl, aged 2½ years, seen Aug. 7, 1911, began walking at 16 months, she was sick for a month in August, 1910, with fever and swollen glands; a month before examination she slipped while the foot was caught between the bed and the wall; she limped that day and would not walk the next or at any time since.

Examination proved negative except for the right foot, which was swollen; there was no tenderness on the tibia or fibula phalanges or metatarsus; there was moderate tenderness over the tarsus, especially on the inner side; the foot was held by muscle spasm in moderate equinovalgus. In both lateral and anteroposterior views, roentgenograms (Fig. 1) revealed a dense pearly shadow of the scaphoid with moderate atrophy of the surrounding bones of the tarsus. Roentgenoscopy was otherwise negative.

Fig. 2.—Case 2: Note increased density and diminished size of shadow of scaphoid on right (*a*) compared with left and relative atrophy of the bones adjacent to scaphoid on right (*b*).

Fig. 3.—Case 2 (four months later than Fig. 2): Note that scaphoid on right is less extensively ossified than on left, and that ossified portion is in two fragments. On the left the tarsal bones have their normal size and density.

Plaster of Paris was applied to the foot and lower leg and occasionally renewed. During the first month the symptoms all increased; during the second month the child walked with comfort in the plaster and a roentgenogram taken two months after the first showed less atrophy of the surrounding bones. The appearance of the scaphoid was unchanged except that at the center there was a distinct "punched-out" look. Plasters were continued for two months more and a Whitman plate was worn for a few weeks after the plaster was removed. All symptoms at this time had disappeared, and there has been no relapse in the past two years of walking without support.

CASE 2.—D. T., girl, aged 4, seen Oct. 27, 1913, for several weeks has had moderate tenderness in one foot, which is now slightly swollen and warm. The roentgenogram (Fig. 2) shows moderate retardation of growth and increase in density of the scaphoid in this foot. Examination and history are otherwise negative. This child was treated by Dr. Mitchell, the family physician, in much the same manner as was Patient 1. The foot was supported for a little over two months. All symptoms have disappeared.

Pfahler[1] reviews the theories which have been advanced as to the etiology and pathology of this condition and says:

All authors agree that it is not tubercular. The fact that a distinct sclerosis indicated by the increased density of the ossifying center is present, points to an inflammatory process. It would seem, therefore, that the disease is an osteitis probably of traumatic or rheumatic origin which interferes with the development of the bone.

1. Pfahler, George E.: Isolated Disease of the Scaphoid Bone of the Foot in Children (Koehler's Disease), Surg., Gynec. and Obst., 1913, xvii, 625.

Both the cases here referred to were highly suggestive of tuberculosis in their external appearance, but both patients have made recoveries almost too prompt and complete to be consistent with that diagnosis. One of the cases had a distinct history of injury; in the other, there was none. One case became worse clinically during the first month of fixation; the other improved rapidly from the start. In one the temperature was consistent with a tuberculous infection during the height of the symptoms; no record of the temperature in the other case is available. My own theory (not yet wholly abandoned) was that we were dealing with a mild tuberculous focus which had reached the stage of healing and sclerosis before the accident broke down the wall of cicatrization and called attention to the foot.

Empire Building.

SPOROTRICHOSIS OF THE EYE *

WILLIAM H. WILDER, M.D.
AND
CLIFFORD P. McCULLOUGH, S.B.
CHICAGO

In 1898 Schenck[1] published a report of his studies of an organism that he had discovered in the pus from refractory subcutaneous abscesses of the arm. The patient had scratched the index-finger on a nail, causing a small abscess which was opened. In three weeks an ulcer developed on the back of the hand between the second and third metacarpophalangeal joints. The inflammation traveled up the arm and several abscesses formed.

From two different foci of the disease Schenck obtained and cultivated an organism the characteristics of which were similar to those of many of the yeasts and fungi. Dr. Erwin F. Smith of the U. S. Department of Agriculture tentatively assigned it to the genus *Sporotrichum*.

The pathogenicity of the organism was demonstrated by subcutaneous injections in dogs. Nodules developed containing yellowish-red gelatinous material, and cultures from this and the walls of the abscess gave the characteristic growth of the organism. Inoculation of a white mouse caused death, and the organism was recovered from the local lesion and also from the lungs and liver.

In 1900 Hektoen and Perkins[2] studied and reported a similar case of refractory subcutaneous abscesses from which an organism was isolated, identical in essential details with the one described by Schenck, which they called *Sporothrix schenkii*. In their case, in a boy of 5, the lesion developed on the index-finger after a blow with a hammer. The denuded area did not heal, the finger became swollen, and in a short time a well-defined, undermined ulcer the size of a dime developed, the floor of which was covered with grayish pus. The lymph-vessels of the arm enlarged and numerous abscesses formed which healed with difficulty after opening.

Glycerin-agar tubes inoculated with material from the abscesses all developed pure cultures of the organism, which showed after a few days in an incubator at 37 C. (98.6 F.) grayish-white, elevated irregular colonies about the size of a pin-head. Hektoen obtained growth on agar, blood-serum, gelatin, potato, bouillon and vegetable infusions.

The first extra-American case was reported by deBeurmann and Raymond in 1903; since then many cases have been reported, the lesions affecting the subcutaneous tissues, lungs, muscles, tendons and also the mucous membranes, including the conjunctiva, pharynx and larynx. DeBeurmann and Gougerot, with their associates, have called attention to various morphologic and cultural differences in the sporothrix, many of which have since proved to be inconstant.

The following case observed by us, of infection of the eye with sporothrix, is, we think, the second indubitable one of its kind in this country, the other having been reported by Gifford in 1910.

REPORT OF AUTHORS' CASE

History.—C. P. M., a student, had been working in the laboratory with cultures of various strains of sporothrix, and on several occasions small capillary pipets containing emulsion of the organism were broken at a distance of 8 or 10 inches from the face.

Fig. 1.—Ulceration on lower lid.

Fig. 2.—Enlarged follicle and small ulceration on upper lid.

On the evening of July 10, 1913, he noticed a soreness of both eyes, together with photophobia and a sensation as if a foreign body was under the lids. The following morning the lids were slightly swollen, the pain was increased and the surrounding lymph-glands were quite tender on pressure.

July 11, the general condition was good; there was no fever. Leukocyte-count was 9,000. The pain, swelling of the eyelids and photophobia had increased. The conjunctiva of the eyelids of both eyes was reddened and so swollen that the fornix rolled out in a mass when the lower lids were everted. In addition there were present on the palpebral conjunctiva and also on that of the fornices several grayish-yellow, slightly elevated spots varying in size from 0.5 to 3 mm. in diameter from some of which the covering epithelium had been cast off so that they seemed like small ulcers. Numerous follicles presented in other portions of the conjunctiva. Secretion was rather scanty, and an examination of a smear made from gentle scraping over the spots and the conjunctiva, stained with alkaline methyl blue, showed no organisms, but numerous pus-cells. The next day scrapings were taken from the shallow ulcers and aerobic and anaerobic cultures were made. Potassium iodid, 10 grains

* From the Memorial Institute for Infectious Diseases.

1. Schenck: Refractory Subcutaneous Abscesses Caused by a Fungus Possibly Related to the Sporotrichia, Bull. Johns Hopkins Hosp., 1898-1899, p. 286.

2. Hektoen, Ludvig, and Perkins, C. F.: Refractory Subcutaneous Abscesses Caused by Sporothrix Schenkii—A New Pathogenic Fungus, Jour. Exper. Med., Oct. 1, 1900, p. 77.

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three times daily, was given. The eyes were washed out several times daily with a solution of oxycyanid of mercury, 1:4,000.

July 16, the condition had not improved; there was swelling of the preauricular glands, which were painful on pressure. Because of discomfort from irrigation, the strength of the solution of oxycyanid was reduced to 1:6,000. No growth was obtained in the tubes, which were placed at room temperature (from 18 to 20 C., or 64.4 to 68 F.).

July 17, the condition of the lids was no better; more yellowish spots were seen forming in the conjunctiva. The patient seemed quite sick and had a temperature of 100.5 F. The preauricular, anterior cervical, submaxillary and postauricular glands were somewhat swollen and painful on pressure. The small ulcerated spots on the conjunctiva were treated with tincture of iodin.

July 18, the general condition was worse; the patient had headache and malaise; the temperature was 101; the leukocyte-count was 18,000.

Sporothrix was growing in the tubes, and spores were found in the scrapings from the conjunctiva.

July 19, the general condition was worse and the patient went to bed. Temperature was 102; leukocytes 14,600.

During the night a sudden pain occurred in the left knee on the internal side of the upper end of the tibia; in the morning the limb was very sore, and painful on pressure or motion, but without swelling or redness. On application of the ice-bag after twelve hours this pain disappeared. The swelling of the conjunctiva was somewhat less, and no new spots had appeared. The iodid was increased to 20 grains three times daily.

July 20, the temperature was 99 in the morning, and rose gradually to 101.4 in the afternoon. The ulcers in the conjunctiva were healing.

July 21, in the morning there was pain in the left elbow and wrist and the lower end of the right femur, which was very sharp especially on motion and pressure. The temperature was 100.6 in the afternoon.

July 22, the pains were still persistent. The temperature was 101 in the afternoon. The conjunctiva was much improved; the ulcers had healed.

July 23, in the morning all the pain had disappeared except in the left wrist. During the night there had been severe pains in the right knee around the head of the tibia, and also in the right ankle. The temperature was 100.3 in the afternoon, the leukocyte-count 11,200.

July 24, all pain had disappeared. The temperature was 99.4. The conjunctiva was still red and the fornices considerably swollen. From this time the temperature remained normal and also the leukocyte-count. The swelling of the glands disappeared, but the subconjunctival tissue of the fornices remained swollen for some days. Gradually the follicles and conjunctival swelling disappeared and in about two months the lids presented a normal appearance.

Microscopic Examination and Cultures.—July 12, microscopic examination of pus from an ulcerated nodule in the conjunctiva showed no organism. Aerobic and anaerobic cultures were made on blood-agar, Loeffler's serum and aerobic cultures on 2 per cent. dextrose agar, and incubated at 37 C.

July 16, there was no perceptible growth; the tubes were placed at room temperature (from 18 to 20 C.).

July 17, there were numerous small, white, rather indistinct colonies on the dextrose-agar, composed of long branching filaments; there were no spores.

July 18, the colonies were typical of sporothrix, each being distinct, with a center rising in ridge formation like the peak of a mountain. Microscopically there was an abundance of long filaments and round or oval spores; the latter were not only in the filaments but also free. The organisms stained with the ordinary dyes and retained Gram stain.

At this time Gram-positive, oval bodies were seen in smears of pus from the eye; these resembled sporothrix but were found only singly or in pairs, no definite clumps being observed.

A few days later colonies also appeared on the other aerobic cultures, but the anaerobic cultures remained sterile.

Agglutinative and Opsonic Tests.—At no time during the infection or convalescence was eosinophilia detected.

Blood-serum was collected on different days, heated for thirty minutes at 56 C. (132.8 F.), and then placed on ice. Serum from a normal person and from the patient before infection, treated in the same manner, served as a means of control.

From a culture of sporothrix isolated from the eye, a suspension of spores was made, and the agglutinative reaction of the serum determined microscopically. The suspension of spores was made in sterile salt solution, and spontaneous clumping did not occur in hanging drops incubated for one hour at 37 C. Increasing dilutions of each specimen of serum was made and mixed with equal parts of spore suspension. Hanging drops of each of these dilutions were then incubated for one hour at 37 C., and examined microscopically to determine the highest dilution in which agglutination occurred. These tests gave the results recorded in Table 1.

TABLE 1.—AGGLUTINATION OF SPOROTRICHAL SPORES BY PATIENT'S SERUM (NORMAL=0)

Date	Agglutination at Dilution of:
6/20	0
7/3	0
7/18	1:16
7/22	1:16
7/23	1:16
7/24	1:16
7/25	1:24
7/29	1:32
8/2	1:32
8/6	1:64
8/10	1:64
8/14	1:64
8/18	1:64
8/26	1:32

The same samples of serum were used to determine the point of opsonic extinction. Increasing dilutions of serum were made by means of salt solution. Human leukocytes were obtained by collecting blood-agar from a normal person in sterile sodium citrate solution, washed and suspended in sterile salt solution. A suspension of spores from the organism isolated from the eye was made in sterile salt solution. To each dilution of the various serums was added an equal quantity of the suspension of spores and the suspension of leukocytes, the mixture incubated at 37 C. for thirty minutes, and smears made and stained with carbol-thionin. The number of leukocytes engaged in phagocytosis was now determined in each case, 100 white cells being counted. A serum-free mixture of leukocytes, suspension and salt solution treated in the same manner served as a means of control, the dilution of serum in which no more cells engaged in phagocytosis than in the serum-free mixture being called the point of opsonic extinction (Table 2).

TABLE 2.—OPSONIFICATION OF SPORES OF SPOROTHRIX BY PATIENT'S SERUM (NORMAL) = 1:12)

Date	Opsonic Extinction at Dilution of:
6/20	1:12
7/3	1:12
7/18	1:48
7/22	1:24
7/23	1:96
7/24	1:192
7/25	1:192
7/29	1:96
8/2	1:96
8/6	1:96
8/10	1:192
8/14	1:192
8/18	1:192
8/26	1:96

As the patient had worked with five strains of sporothrix, experiments were made to determine if possible which strain caused the eye infection. Four of these strains were obtained from Dr. D. J. Davis.

1. A culture which had been obtained from Dr. Gougerot and supposedly typical of the sporothrix called "sporothrix de Beurmanni."

2. A culture isolated by Dr. Ilektoen in 1898 from a case of typical sporotrichosis.

3. A culture isolated by Dr. D. J. Davis from a case of sporotrichosis.

4. A culture isolated by Dr. K. F. Meyers from lesions on horses suffering with lymphangitis.

5. A strain isolated by Dr. Benjamin F. Davis from subcutaneous sporotrichosis on the hand and arm of a woman.

Comparison of the organism isolated from the eye in this case, with the other strains by ordinary cultural methods, in smears, and in hanging drop preparations, showed no differences, and immunologic tests gave the same reactions with the various strains, as is shown in the summary (Table 3).

TABLE 3.—AGGLUTINATION TESTS WITH THE PATIENT'S HEATED SERUM AND THE DIFFERENT STRAINS OF SPOROTHRIX

	Strain of Sporothrix					Our Case
Date	A	B	C	D	E	F
7/3	0	0	0	0	0	0
7/18	1:16	1:16	1:12	1:16	1:16	1:16
8/6	1:64	1:64	1:64	1:48	1:64	1:64
8/10	1:32	1:64	1:64	1:64	1:32	1:64
8/26	1:32	1:32	1:24	1:32	1:32	1:32

These results are analogous to those obtained by Dr. D. J. Davis[3] with the serum of immunized animals, and indicate that there is no essential difference in the agglutination of various strains of sporothrix. Experiments were then made with the same serum to determine also the point of opsonic extinction of the various strains.

TABLE 4.—OPSONIFICATION OF VARIOUS STRAINS OF SPOROTHRIX WITH PATIENT'S SERUM

	Point of Opsonic Extinction with Strains					Our Case
Date	A	B	C	D	E	F
7/3	1:12	1:12	1:12	1:12	1:12	1:12
7/18	1:48	1:24	1:48	1:48	1:24	1:48
8/6	1:96	1:96	1:96	1:96	1:48	1:96
8/10	1:96	1:192	1:192	1:192	1:192	1:192

Tests were also made with both heated and unheated serums of normal persons, of a woman with sporotrichosis of the right hand and arm and of rabbits immunized with suspension of sporothrix spores. In all of these it was impossible to differentiate in any degree the various strains of the organism by means of opsonic extinction.

PREVIOUSLY REPORTED CASES

The number of reported cases of infection of the eye or its adnexa with sporothrix is not large, and a brief review of the reports of them is instructive in this connection. The first case of sporotrichosis of the eye was reported by Danlos and Blanc[4] in 1907.

CASE 1.—A man, aged 63, had a granulating ulcer on the lower lid near the outer angle. It began as a small white spot which suppurated and formed an ulcer that gradually increased in size. The lower lid was congested and swollen, especially at the outer angle, where the conjunctiva was reddened and edematous. The lesion, 1.5 cm. in diameter, was covered with red and firm granulations, and at several points a little pus exuded. The preauricular glands were normal, but a slightly enlarged gland was noticed under the maxilla. For several years previous to this ulcer a swelling had existed on the right wrist. Cultures from the lid gave typical growths of sporothrix. Local treatment with iodin was of no avail; after four months the ulcer was excised.

CASE 2.—The first undoubted *primary* case of sporotrichosis of the eye was reported in 1908 by Morax and Carlotti.[5] It occurred in a man aged 70 who had a lesion on the left upper eyelid for several weeks. The entire left upper lid and the skin for several millimeters over the eyebrow was red and swollen; a curved line of small yellowish projections which had appeared like small intracutaneous or subcutaneous abscesses extended down from the inner end of the eyebrow to the outer commissure of the eye. In addition a number of shallow ulcerations, covered by an abundant yellowish exudate, were present along the free border of the lid. These lesions were not painful and the lid was only slightly tender on pressure. No other part of the eye seemed to be affected. The large lymphatic trunk extending from the external commissure to the preauricular gland was swollen and hard, and the overlying skin inflamed. At one point a soft yellowish enlargement indicated a small abscess. In a general manner the trunk took an S-shaped curve through the enlarged preauricular, angulomaxillary and submaxillary glands. The preauricular gland was tender and movable and about the size of an almond; the other glands were not so large. This swelling began one week after the onset of the lesion. Microscopic examination of the pus from the abscesses on the lid was negative, but cultures gave growths of sporothrix three days after inoculation. The patient was placed on 2 gm. of potassium iodid a day; in twenty days the ulcers were healed and in a little more than two months all evidence of the trouble had disappeared.

CASE 3.—In the case reported in 1909 by Thibierge and Gastinel,[6] a man aged 30 developed a small granuloma on the left external palpebral commissure; later a generalization of these lesions appeared over the entire body. By extension from the original lesion a crescentic ulceration involved most of the lower lid as well as the bridge of the nose. The surface was covered more or less with crusts which on removal disclosed a deeply ulcerated area. The free border of the lid was infiltrated, and swollen, with some degree of ectropion, but not ulcerated. On the upper lid were two small reddish-brown nodules. The palpebral conjunctiva was reddish throughout. Cultures from the exudate and scrapings of the ulcers gave growths of sporothrix. Complete recovery followed treatment with potassium iodid.

CASE 4.—Burnier[7] described in 1909 a case in a boy, aged 16, with several subcutaneous nodules on the hand, some of which ulcerated, leaving sinuses discharging pus. At the time of ulceration, reddening and a slight swelling of the eyelids were noticed. There were three hard and tender nodules, split-pea in size near the external canthus of the right lower lid; also four or five smaller nodules in the inferior culdesac of the eye. The conjunctiva was not ulcerated, nor were the glands involved. Local cauterization with silver nitrate and galvanic needle followed by healing in about two months; the nodules on the hand resisted treatment. Inoculation of tubes with pus obtained from incision of the nodules demonstrated sporothrix. After one month's treatment with potassium iodid the nodules disappeared.

CASE 5.—A generalized sporotrichosis in a man aged 65, was reported in 1909 by deBeurmann and Gougerot.[8] One morning the patient noticed that one of his eyes was congested, but without pain or tenderness on pressure. This condition persisted for two months, when the periorbital region became tender; photophobia developed and the cornea became dim and later ulcerated. The ulcerating keratitis was followed by hypopyon, anterior staphyloma, perforation of the cornea, escape of the vitreous and loss of the eye, all in a few days. No cultures seem to have been made from the eyes, but sporothrix was recovered from other sources. This seems to have been a metastatic panophthalmitis from general sporothrix infection.

CASE 6.—Morax[9] in 1909 reported sporotrichosis of the eye in a woman aged 38. Small yellowish-white nodules appeared in rapid succession in the right semilunar fold, ulcerating later and producing pedunculated lesions. A similar lesion appeared

3. Davis, D. J.: Interagglutination Experiments with Various Strains of Sporothrix, Jour. Infect. Dis., 1913, xii, 140.

4. Danlos and Blanc: Un cas de sporotrichose palpebral, Bull. et mém. Soc. méd. d. hôp. de Paris, 1907, xxiv, 1450.

5. Morax and Carlotti: La sporotrichose palpébrale, Ann. d'ocul., 1908, cxxxix, 418.

6. Thibierge and Gastinet: Trois cas de sporotrichose dermo-hypodermique dont un avec lesions du pharynx, du larynx et du tibia, Bull. et mém. Soc. méd. d. hôp. de Paris, 1909, xxvi, 537.

7. Burnier: Un cas de sporotrichose gomeuse hypodermique ulcéreuse disseminée, Ann. d'ocul., 1909, cxli, 344.

8. De Beurmann and Gougerot: Sporotrichose cachectisante mortelle, Bull. et mém. Soc. méd. d. hôp. de Paris, 1909, xxvi, 1046.

9. Morax: La sporotrichose de l'appareil visuel, Ann. d'ocul., 1909, cxli, 321.

in the lower retrotarsal fold and another in the upper. There was considerable induration in both lids with an increase in the secretion. The caruncular region was injected, while the bulbar conjunctiva and the cornea appeared normal. The cervical and preauricular glands became enlarged on the second day of the disease, and in a few days were quite tender on pressure. Under surgical treatment and local application of silver the symptoms became worse. As cultures gave growths of sporothrix, treatment with potassium iodid was instituted, and healing took place. The serum of the patient caused agglutination of sporothrix on the thirty-second day of the disease, clumping occurring almost at once in dilutions of 1:10, and in from thirty to sixty minutes in dilutions of 1:200. The blood-count was 65 per cent. polynuclears, 18.5 per cent. mononuclears, 13.5 per cent. lymphocytes and 3 per cent. eosinophils.

CASE 7.—A. Fava[10] recorded in 1909 an infection of his own eye which is remarkable in that the mode of infection is known. While injecting an emulsion of sporothrix into a rabbit, droplets accidentally infected the eye. Half an hour later he washed his eyes with a 1:4,000 solution of oxycyanid of mercury. No symptoms appeared until eleven days later, when he noticed a sensation as of a foreign body in the outer corner of the lower lid. On examination a small yellow spot was seen on the lower tarsal conjunctiva, and the eye was congested and slightly tender on pressure. The following day the tenderness increased and there was a slight edema of the lids; the preauricular and angulomaxillary glands were enlarged and tender. Several other nodules also appeared on the lower tarsus, one 3 mm. in diameter and several smaller ones on the upper. Three days later a small nodule appeared on the outer surface of the upper lid. All the nodules ulcerated and developed granulations like those following a broken chalazion. The lids were swollen and the whole conjunctiva congested, and the secretion increased. Cultures from the ulcerated nodules gave sporothrix, and microscopic examination of the secretion demonstrated an abundance of eosinophils and some sporotrichal forms. On the fifteenth day of the disease there were 6,000 leukocytes with 8 per cent. of eosinophils. Recovery occurred in about two and one-half months of treatment with potassium iodid, from 2 to 8 gm. a day.

CASE 8.—Another case of generalized sporotrichosis of the skin and subcutaneous tissues in which there were symptoms of eye involvement is reported by Jeanselme and Chevalier.[11] Seven weeks after the appearance of the nodules on the body the conjunctiva of the right eye became congested. The right pupil was obstructed by an exudate and could not be dilated with atropin. A few days later the iris became discolored and vision greatly decreased. Simultaneously there appeared an ulcerated nodule in the mouth. No cultures were made from the eyes, but sporothrix was obtained from lesions elsewhere.

CASE 9.—Morax and Cruchaudeau[12] describe a case in a woman aged 22, who first noticed a slight redness of the left eye accompanied by some sense of discomfort and increased lacrimation. The lower lid was swollen and on the tarsal conjunctiva was a yellow ulcerating nodule, from which sporothrix was isolated in culture. A few days previous to the inoculations the serum agglutinated sporothrix at a dilution of 1:50. Tender and enlarged preauricular glands accompanied the eye lesion. After one month's treatment with potassium iodid all the symptoms disappeared.

CASE 10.—A case in which the eyelids were affected by direct extension is reported by Velter.[13] A man aged 52 had a small abscess on the right lower lid which had existed for three weeks, causing considerable pain. The lid was swollen, its skin smooth and red; incision released a large amount of pus. The surrounding tissues were indurated. The eyeball appeared normal, but the bone at the outer and inferior wall of the orbit was eroded. Cultures from the lid showed sporothrix. A similar nodule appeared on the upper lid, but at no time was there any involvement of the conjunctiva or marked glandular enlargement. Potassium iodid gave good results.

CASE 11.—Jeanselme and Poulard[14] describe the case of a man aged 46, who had an amputation of the leg for a tumor of the bone, followed several years later by a generalized eruption of small red and hard nodules on the face and body. One of these nodules occurred on the outer surface of the left lower eyelid just below the margin. The anterior part of the eyeball was injected, and the pupil narrowed, irregular and obstructed by an exudate, but there was no infiltration of the cornea. Posterior synechia and discoloration of the iris were present, and there was pain, photophobia and decreased vision. The generalized eruption proved to be sporotrichosis; the eye lesion was regarded as sporotrichal because it also was healed, under the use of potassium iodid.

CASE 12.—The only case reported in the United States is by Gifford.[15] A woman, aged 18, complained that the left eye was congested and slightly uncomfortable, the condition having lasted for about two months without any marked change. When seen the right eye appeared normal. The left eye was inflamed and watery, the tarsal conjunctiva and retrotarsal folds being slightly congested. On the ocular conjunctiva a somewhat crescentic thickening extended from a little above the equator at the inner side of the cornea to a point ⅛ inch above the horizontal meridian at its outer side. This thickening was ¼ inch broad and smooth at its widest part but nodulated with lumps from 1/16 to 3/32 inch in diameter, at the extremities. One of these nodules was yellow and contained a semifluid substance, from which sporothrix was isolated by culture. Treatment by potassium iodid seemed to be effective, but the patient disappeared from observation before complete recovery.

CASE 13.—Morax[16] reported the first case of infection of the lacrimal sac by sporothrix. A man, aged 40, complained of watering and a feeling of weakness in his left eye, followed in a short time by swelling and inflammation of the lacrimal region and the appearance of pus at the level of the internal commissure. Three weeks after the onset, suppurative dacryocystitis with prelacrimal abscesses developed. The lacrimal sac was swollen and on gentle pressure pus exuded from both superior and inferior puncta. The skin over the region was somewhat infiltrated. After incision and withdrawal of yellow purulent material, a sound could be passed into the nose.

CASE 14.—In the case of Chaillous,[17] the patient complained of matting of the eyelids after sleeping, this condition lasting for eighteen days before examination. The right upper lid was swollen, reddened and edematous. On the tarsal conjunctiva were numerous yellow nodules, from pin-head to split-pea in size, irregular in form and slightly ulcerated. The bulbar conjunctiva was less congested. A preauricular and a superficial cervical gland became quite tender and enlarged. Cultures from the ulcerated nodules showed sporothrix.

CASE 15.—LaPersonne[18] describes a case in a woman aged 64 who, during the course of numerous subcutaneous and periosteal lesions, developed a violent iridocyclitis of the left eye with deposits on the posterior surface of the cornea and a nodule on the iris. The anterior chamber of the eye became involved, accompanied by pain in the ciliary region. The eye softened and vision was almost lost. Punctures of the anterior chamber liberated a yellowish albuminous fluid from which no diagnosis could be made. Two months later another similar lesion appeared and perforated the coat of the eye.

10. Fava: Un cas de sporotrichose conjunctivale et palpébrale primitive, Ann. d'ocul., 1909, cxli, 338.
11. Jeanselme and Chevalier: Sporotrichose à foyers multiples, Bull. et mém. Soc. méd. d. hôp. de Paris, 1910, xxix, 784.
12. Morax and Cruchaudeau: Sporotrichose conjunctivale primitive, Ann. d'ocul., 1910, cxliv, 69.
13. Velter: Un cas de sporotrichose orbito-palpébrale primitive, Ann. d'ocul., 1910, cxliv, 65.
14. Jeanselme and Poulard: Sporotrichose de l'iris, Ann. d'ocul., 1910, cxliv, 65.
15. Gifford: Sporotrichosis of the Eyeball and Eyelids, Ophth. Rec., 1910, xix, 573.
16. Morax: Sporotrichose primitive du sac lacrymal, Ann. d'ocul., 1911, cxlv, 49.
17. Chaillous: Sporotrichose conjunctivale primitive, Ann. d'ocul., 1911, cxlv, 47.
18. LaPersonne: Sporotrichose oculaire, Presse méd., 1912, xx, 93.

ball. A fungus was demonstrated among the débris of the iris and exudate, and a few days afterward sporothrix was obtained in culture. The patient bore potassium iodid poorly, and finally the eye was enucleated because of the pain.

CASE 16.—The last case described is by Morax[19] in a man aged 37, who had nodular lesions on the skin of the thighs and a nodule on the outer surface of the lower lid, below the internal palpebral ligament. This nodule was violet-red, firm and easily movable without pain. It was about 0.7 cm. in diameter and projected 2 mm. above the surface, with the center slightly depressed like a lacrimal fistula. The conjunctiva appeared normal and there was no cutaneous reaction or congestion of the surrounding tissues. Exploration by means of a probe showed that there was no connection of the lesion with the eye. Cultures from this nodule gave sporothrix. Cure followed treatment with potassium iodid.

In experiments by Fava[20] and others, following the injection of a culture of sporothrix into various parts of the eye of a rabbit, lesions were produced resembling those of sporothrix infection of the human eye. The incubation period generally lasted from twelve to eighteen days. The organism was recovered from the eye lesion.

CLINICAL CONSIDERATION

From a study of the cases that have been recorded and of the one we have observed, we should say that infection of the conjunctiva by sporothrix causes a marked congestion of the membrane, particularly the palpebral portion, the fornix and the semilunar folds. The bulbar portion is not so frequently infected.

Numerous follicular prominences appear in the palpebral conjunctiva and in the fornix.

Small yellowish nodules, varying in size and shape, develop rapidly in the conjunctiva, and these may ulcerate. When opened, the contents of the nodules do not escape rapidly as from small abscesses, but seem to be of a gummy consistence. These little nodules developed so rapidly in the case we observed that on the second day new ones presented that had not been seen the day before.

Secretion is rather scanty and hardly sufficient to stick the lids together at night, but lacrimation is rather abundant. The eyelids are somewhat edematous and thickened, and palpation shows a well-marked induration of the subcutaneous tissue. Enlargement and tenderness of neighboring lymph-glands is also present.

Subjectively, there is a sensation of a foreign substance under the lids, and so much discomfort that use of the eyes is almost impossible. The discomfort comes on rapidly after the infection. The two cases of laboratory infection (that of Fava and the present one) and the absence of a history of trauma in the other cases, seem to show that the sporothrix is able to penetrate the normal conjunctiva. It also appears from the reports of cases that infection of the eye may be secondary to a generalized sporotrichosis. Probably in most of these cases the infection is ectogenous, but the suspicion that it may be endogenous is aroused by the case of LaPersonne, in which, after a violent iridocyclitis and perforation of the eyeball, sporothrix was obtained from the contents of the bulb.

That general symptoms may arise from a primary lesion of the eye is indicated in our case by the fever, leukocytosis and pains in the bones of the extremities.

DIAGNOSIS

Some of the clinical features of this infection are common to other conditions. Lymphadenopathy would be present with chancre of the conjunctiva, but in the initial lesion of syphilis it is very unusual to have such multiple erosions or ulcerations, and scrapings from such an ulcer would probably show the characteristic spirochete.

Tuberculosis of the conjunctiva would probably not be so rapid in its course, and it would be a week or more before the caseous tuberculous nodule would break down and form the ulcer, whereas in sporotrichosis the little ulcers develop in a few days.

Parinaud's conjunctivitis presents more points of similarity, and it is possible, as mentioned by Morax, that cases of sporotrichosis may have been mistaken for Parinaud's conjunctivitis.

In the latter, the vegetations on the conjunctiva are different from the follicles and the yellowish nodules of sporotrichosis. The adenopathy in Parinaud's conjunctivitis points to a severe infection, but all attempts to isolate an organism from the lesions have failed. Recently, however, Verhoeff has observed in such conditions an organism like leptothrix. On the other hand, the diagnosis of sporotrichosis is easy if scrapings from the nodules or ulcers are inoculated on appropriate mediums and left at from 18 to 20 C. for the organisms appear in from three to ten days. The presence of Gram-positive, spore-like bodies in a direct smear from the conjunctiva should suggest sporothrix.

We wish to acknowledge the kindness of Dr. L. Hektoen, director of the Memorial Institute for Infectious Diseases, for valuable suggestions offered in the study of this case.

122 South Michigan Boulevard.

19. Morax: Sporotrichose primitive des paupières simulant une fistule lacrymale, Ann. d'ocul., 1913, cxlix, 185.
20. Fava: Sporotrichose expérimentale de l'appareil oculaire du lapin, Ann. d'ocul., 1910, cxliv, 77.

CLINICAL REPORT OF FIVE HUNDRED AND SEVENTY-ONE CASES OF PULMONARY TUBERCULOSIS TREATED WITH TUBERCULIN *

LOUIS SHALET, M.D.
Attending Physician Tuberculosis Clinics, Department of Health
NEW YORK

Early in the spring of 1910, and following my presentation of a short paper on tuberculin at one of the meetings of the medical staff of the Otisville Sanatorium, of which I was a member, Dr. E. S. McSweeny, the physician then in charge, asked me to reorganize the tuberculin class among the patients.

After rather an extensive perusal of much of the literature on the subject, I was struck by the divergent views held by the different investigators on tuberculin therapy in general and the matter of dosage and reaction in particular. I then decided to lay aside all my preconceived notions on tuberculin and begin injections with a dose well below any possible reaction, such as 0.000,000,01 gm., and to double each previous dose at weekly intervals, using Koch's B. E. In the last year of this work, patients in the class were started on Koch's Old Tuberculin exclusively, and when they were standing well from 0.003 to 0.006 gm. at a dose, they were then changed to Koch's B. E., 0.000,1 gm., which was later progressively increased according to the table. The

* From the Department of Health Sanatorium for tuberculosis at Otisville, New York.

gain was twofold: there were less reactions to the smaller doses on account of the O. T. being weaker, and there were also fewer reactions to the larger doses of B. E. because of the previous immunizing effect of the O. T. Incidentally, the patients were thus immunized to both the endogenous and the exogenous toxins of the bacillus. After over two thousand injections were given of less than 0.000,001 gm. each, with not a single reaction in any one of them, I decided that this amount was needlessly small to begin with, after which injections were begun with 0.000,001 gm. B. E. As a matter of fact, the earliest reaction dose was clinically found to be about four times as large, namely, 0.000,004 gm. B. E.

One reason for trying to make the tuberculin treatment as brief and decisive as the patient's tolerance would permit was due to the short stay in the institution of the average patient (about five months), which practically excluded the method of administering very small doses of tuberculin over long periods of time. The idea was to have each dose come as near as possible to producing a clinical reaction without actually doing so, as whatever advantage there may be in beginning treatment with very small doses very slowly increased in those who have the time and means to carry it out, it is entirely unsuited to the vast number of curable tuberculous patients who have their living to make, and cannot spend more than about six months in a sanatorium, to say nothing of the fact that after all, tuberculin such as B. E. is no more than a vaccine, in the successful use of which one must apply the same rules as govern vaccine therapy in other diseases in which we know that the prolonged administration of minute doses will lead to no therapeutic results, though it may produce an immunity to itself.

The cases were unselected male patients,[1] varying in age from 16 to 50, the great majority of whom were moderately advanced, or the so-called Stage II (Turban). The other treatment of the patients in the class, such as rest, exercise, etc., differed in no respect from those who did not receive tuberculin. The dilutions of the tuberculin used were made with sterile normal saline, no preservative being added. The diluted tuberculin was put up in sterile rubber-stoppered vials of 5 c.c. capacity, and were kept in the ice-chest. What was left in the vial at the end of the day it was used, was discarded. The tuberculin was diluted fresh from the stock bottle every three weeks. The O. T. was that prepared in the research laboratories of the department. The B. E. was Mulford's and Alexander's, 0.005 gm. to the cubic centimeter. The number of patients in the class at any one time varied from seventy-five to 110, and the period covered by the subject-matter of this paper was from June, 1910, to January, 1913, or two and a half years in all.

The actual injections were made under strictly aseptic conditions, and were given hypodermically in the outer aspect of the upper arm, except for the large doses such as 0.001 gm. B. E. and over, which were always given in the back between the vertebral border of the scapula and the spine, the two sides being used alternately. No undesirable local by-effects were noted except occasional slight tenderness, though sterile "abscesses" may develop at the site of injection of large doses of B. E., resulting from the intense local *Stichreaktion*.

1. The clinical impressions and conclusions were really drawn from about two hundred more cases (all female), making a total of seven hundred and fifty cases in all, but unfortunately the collected records of the former have been mislaid.

In passing, mention should be made of the great difference existing in the minds of tuberculous patients between the tuberculin treatment of tuberculosis and the other accepted therapeutic measures as used in our sanatoriums. Custom has given the patient latitude in choosing or rejecting (particularly the latter) tuberculin injections often against the physician's advice in the matter, in contradistinction to stropping the chest, rest in bed, taking cough-mixtures, etc. In these hardly any patient dreams of questioning his physician's judgment and skill; but let tuberculin be suggested, and the patient immediately puts himself on the defensive. Not only were we hampered in recruiting new members in the class, but it was hard to keep many otherwise desirable patients after they joined. If the patient happened to be injected with tuberculin earlier in the day before being weighed, and found that he had lost some pounds during the week, the tuberculin was to blame, etc., on the strength of which he would not only refuse further treatment himself, but would try to get other members in the class to refuse also. The result was that while half of the patients in the class dropped out because they were leaving the institution, the other 50 per cent. refused further treatment with tuberculin for reasons no better than the foregoing. Practically none were found to be unsuitable for treatment once they were in the class, because no matter how hypersensitive to tuberculin a patient was found to be, the dose could always be attenuated to his tolerance.

The terms "reaction" and "allied conditions," as used in this work, were standardized for purposes of comparison as follows:

$$\text{Clinical Tuberculin Reaction} = \begin{cases} \text{Afebrile} & \{a \\ \text{Febrile} & \{b \end{cases}$$
$$\text{Persistent Accentuated Symptoms.}$$

All tuberculous persons in the active, and many even in the quiescent stage of the disease, will react subjectively, and often clinically, to very small doses of tuberculin, such as 0.000,000,1 and 000,000,01 gm. B. E., or even less. The term "reaction" as used in that sense is practically always afebrile and is defined as: (*a*) a distinct change in subjective sensation, difficult to define, but quite a real condition to the one injected, which, while hardly pronounced enough to make the person feel sick, yet is far from agreeable; (*b*) a condition occurring in less than twenty-four hours after the injection of tuberculin characterized by the presence of some or all of the following: slight feeling of malaise, mild disinclination to food, and greater ease because more fluid expectoration. These conditions occurring and to be expected in practically all cases were, therefore, not looked on as a reaction in the clinical sense, and not of enough importance in themselves to affect the progressive increase in dosage.

The kind of reaction which did affect the progressive dose increase follows tuberculin injection usually within less than twenty-four hours, and is characterized by the presence of some or all of the following: distinct increase in cough and expectoration, also headache, anorexia, pain in back and joints, with lassitude, sufficiently pronounced to make it inadvisable either for the patient so affected or for the physician treating him to continue him at his exercise. This condition is usually, but may not be, accompanied by a rise in temperature from 99.5 to 103 and more.

The term "persistent accentuated symptoms" was used to define the condition of a tuberculous patient (who may or may not use tuberculin), when for an

indefinite period of time his cough, expectoration, temperature-curve and nutrition show a distinct tendency for the worse. This was considered of sufficient importance either to stop tuberculin injections altogether until the symptoms subsided, or else materially to diminish the weekly tuberculin dose. In other words, it was acted on the same as a tuberculin reaction.

TABLE 1.—LENGTH OF TIME INDIVIDUAL PATIENTS WERE UNDER TREATMENT WITH TUBERCULIN

Patients		No. of Weeks per Patient	Total No. of Weeks
No.	Per Cent.		
92	16.1	1	92
89	15.5	2	118
34	5.9	3	102
37	6.3	4	148
19	3.3	5	95
22	3.8	6	132
26	4.5	7	182
32	5.6	8	256
22	3.8	9	198
18	3.1	10	180
4	0.7	11	44
8	1.4	12	96
21	3.6	13	273
4	0.7	14	56
11	1.9	15	165
10	1.7	16	160
4	0.7	17	68
11	1.9	18	198
9	1.5	19	171
6	1.0	20	120
6	1.0	21	126
8	1.4	22	176
4	0.7	23	92
3	0.5	24	72
3	0.5	25	75
5	0.8	26	130
3	0.5	27	81
7	1.2	28	196
2	0.3	29	58
3	0.5	30	90
3	0.5	31	93
3	0.5	32	96
5	0.8	33	165
4	0.7	35	140
1	0.1	36	36
2	0.3	39	78
1	0.1	40	40
1	0.1	41	41
3	0.5	42	126
6	1.0	43	258
1	0.1	44	44
1	0.1	46	46
1	0.1	49	49
16	2.8	*	1,248
571	100—	11.3	6,470

* Eighteen months each or 78 weeks.

On the occurrence of a clinical reaction, tuberculin was discontinued until all symptoms of the same had subsided, when injections were recommenced with fourth lower dose removed. Only the two conditions "clinical reaction" and "persistent accentuated symptoms" were considered in influencing tuberculin dosage.

A clinical tuberculin reaction occurring in the course of treatment in no demonstrable way permanently influences for the worse either the disease or the subsequent course of tuberculin treatment, as the same patients later stand with impunity many times the dose at which they formerly reacted.

If a large dose is reached too quickly, a hypersensitiveness to tuberculin supervenes, necessitating going back to a very small dose indeed. The determination of dosage is purely arbitrary, as sensitiveness differs not only in different patients, but at different times in the same patient. On the other hand, should a reaction occur after a large dose with a slowly progressive dose increase, it merely shows the limit of that patient's maximum tolerance to tuberculin for the present, after which it is best to leave off injections for a time, according to results obtained.

While a patient who has once been thoroughly treated with tuberculin probably never reacts to his disease the way he did before treatment, yet the immunity so acquired to the tuberculin does not last much over two months, if that long, although the good effect persists for a variable time after the acquired immunity to tuberculin has been lost.

Much has been said of the mental effect of tuberculin, as if that were something separate and distinct from its physical effects. If the psychic effect is for good, it is because the tuberculin is having a favorable influence on the lesion and the patient feels more nearly normal owing to diminished toxemia. If the patient feels depressed after tuberculin, it is due to doses which are either too large, or given at too frequent intervals, or both. In other words, the patient is near a clinical reaction, and his depression is nothing less than its earliest manifestation.

Tuberculin may be *tried* in all cases of pulmonary tuberculosis of whatever stage, provided the patient is given a small enough dose, with the effects carefully watched. At Dr. Turban's sanatorium, in Davos Platz, Switzerland, which I visited early in the spring of 1912, they use as small a dose as 0.000,000,000,1 gm. Bovine T. R., and they assert that if persisted in, it will often bring a patient's temperature down to normal, when other measures fail. Tuberculin, however, is to be *used* in all cases which run the chronic course, so common in this disease, particularly in the vast number of patients whose improvement seems to have stopped short of a clinical cure under sanatorium treatment alone, and also in those patients who, for one reason or another, cannot leave their families and affairs and go to a sanatorium in the country.

While not sufficient time has elapsed after the treatment of the patients on whom this report is based, to permit any conclusions from the effect of the treatment, on their own prognosis, there is good authority for the statement that the clinically cured, following the use of tuberculin, are not so apt to relapse, or to develop tuberculous complications, as those who had sanatorium care alone.

TABLE 2.—NUMBER AND DOSES OF B. E. TUBERCULIN INJECTIONS WITH PERCENTAGE OF REACTIONS AND PERSISTENT ACCENTUATED SYMPTOMS

Dose Gm.	No. of Injections	Reaction		Persistent Accentuated Symptoms	
		No.	Per Cent.	No.	Per Cent.
0.000,000,001 to 0.000,001	2,040	0	...	0	...
0.000,001	255	0	...	0	...
0.000,002	272	1	0.3	0	...
0.000,004	261	0	...	5	1.9
0.000,008	232	3	1.2	7	3.0
0.000,016	211	5	2.3	3	3.3
0.000,032	182	5	2.7	3	1.6
0.000,064	163	6	3.6	4	2.4
0.000,1	171	4	2.3	2	1.1
0.000,2	155	7	4.5	3	1.9
0.000,4	151	8	5.2	0	...
0.000,8	74	6	8.1	4	5.4
0.001	115	19	16.5	0	...
0.001,25	37	5	13.5	1	2.7
0.001,5	26	3	11.5	0	...
0.001,75	18	2	11.1	0	...
0.002	54	5	9.2	2	3.7
0.003	23	2	8.6	0	...
0.004	10	3	30.0	0	...
0.005	8	0	....	0	...
0.006	7	2	28.5	0	...
0.007	4	0	....	0	...
0.008	3	0	....	0	...
0.009	2	1	50.0	0	...
0.010	1	1	100.0	0	...
	4,515	88	1.9	38	0.8

RESULTS

In figuring the result of tuberculin therapy in pulmonary tuberculosis, the most important and at the same time the most difficult factor to standardize is the patient and his disease. For one thing, there is no known way of determining with any degree of exactness

the length of time a given tuberculous patient has had the disease, or in other words, his resistance. This fact makes it very difficult to determine accurately how much of the improvement during tuberculin administration was due to that, and how much to the native resistance of the patient to his disease, supplemented by the usual sanatorium treatment. Therefore, until more exact means of determining the extent of the patient's resistance to his infection is discovered, we have to rely solely on clinical observation. One thing which we do know beyond question is the specific effect for good of subcutaneous injections of tuberculin on localized visible forms of tuberculosis in the eye, skin, glands, etc. This has been noted repeatedly by numerous independent observers all over the world. While none but the overenthusiastic claim as much for it in the treatment of pulmonary tuberculosis, still it is no more than to be expected that it would have some definite good effect in that disease, and I have found this to be as follows:

The first few injections will slightly increase expectoration, making it more fluid, and brought up with less coughing; later on, expectoration and with it cough is

TABLE 3.—NUMBER AND DOSES OF O. T. TUBERCULIN INJECTIONS WITH PERCENTAGE OF REACTIONS AND PERSISTENT ACCENTUATED SYMPTOMS

Dose Gm.	No. of Injections	Reaction No.	Reaction Per Cent.	Persistent Accentuated Symptoms No.	Persistent Accentuated Symptoms Per Cent.
0.000,001	262	0	...	0	...
0.000,002	181	0	...	0	...
0.000,004	157	3	1.9	1	0.6
0.000,008	153	2	1.3	2	1.3
0.000,016	165	1	0.6	2	1.2
0.000,032	130	0	...	1	0.7
0.000,064	103	2	1.9	3	2.9
0.000,1	146	1	0.6	0	...
0.000,2	126	3	2.3	2	1.5
0.000,4	83	3	3.6	1	1.2
0.000,8	66	4	6.0	1	...
0.001*	0	..	...	..	...
0.001.25*	0	..	...	..	...
0.001.5	42	2	4.7	1	2.3
0.001.75	11	..	...	..	...
0.002†	0	..	...	..	...
0.003	43	2	4.6	0	...
0.004§	0	..	...	..	...
0.005§	0	..	...	..	...
0.006	15	2	13.3	0	...
Total	1,683	25	1.4	14	0.8

* Not given, as last dose 000.8 was almost doubled to 0.001.5.
† None given, as 0.001.5 was doubled at next dose to 0.003.
§ None given, as 0.006 was given after 0.003.

distinctly diminished. The tendency to toxic manifestations of the disease such as rapid pulse, dyspnea and slight elevation of temperature on exertion, is inhibited to a great degree in those who receive tuberculin as opposed to those who do not. Routine examination of the sputum will disclose a much greater tendency (50 per cent.) to absence of bacilli in those who are treated. Physical examination of the chest will show the lesion to be much less active; the râles, particularly, will be drier and scant. There is a somewhat better showing in weight increase in the tuberculin-treated.

To sum up, the most constant effects of tuberculin in those who do well under it are the diminished sputum and cough, particularly when the latter is dependent on the amount of sputum, and the distinct tendency for the sputum to become non-bacillary, thus demonstrating clinically the specific effect of the tuberculin on the site of the disease. The other signs of improvement are the natural results of the diminished activity in the lesion.

SUMMARY

The net results of tuberculin treatment in the patients forming the basis for this paper may be summarized as follows:

1. Those who were distinctly improved and apparently cured (clinically), 25 per cent.

2. The indifferent (60 per cent.), who may be subdivided into (*a*) 40 per cent. who responded indifferently while the tuberculin was continued, but on the cessation of which did distinctly better than before tuberculin treatment, an indeterminate number of

TABLE 4.—NUMBER OF PATIENTS AND THEIR HIGHEST DOSE, ALSO PERCENTAGE OF HIGHEST DOSE REACHED TO TOTAL NUMBER GIVEN OF THAT DOSE
(B. E. TUBERCULIN)

Highest Dose Gm.	Patients No.	Patients Per Cent.	Total No. Given of that Dose	Times this Was the Highest Dose Reached No.	Times this Was the Highest Dose Reached Per Cent.
0.000,001—	82	14.3	2,040	82	4.0
0.000,001	20	3.5	295	20	6.7
0.000,002	20	3.5	272	20	7.3
0.000,004	21	3.6	261	21	8.0
0.000,008	26	4.5	232	26	11.2
0.000,016	17	2.9	211	17	8.0
0.000,032	16	2.8	182	16	8.7
0.000,064	13	2.2	163	13	7.9
0.000,1	20	3.5	171	20	11.6
0.000,2	10	1.7	155	10	6.4
0.000,4	17	2.9	151	17	11.2
0.000,8	12	2.1	74	12	16.2
0.001	21	3.6	115	21	18.2
0.001.25	7	1.2	37	7	18.9
0.001.5	3	0.5	26	3	11.5
0.001.75	2	0.3	18	2	11.1
0.002	26	4.5	54	26	48.1
0.003	9	1.5	23	9	39.1
0.004	2	0.3	10	2	20.0
0.005	3	0.5	8	3	37.5
0.006	1	0.1	7	1	14.2
0.007	0	...	4	0	....
0.008	0	...	3	0	....
0.009	1	0.1	2	1	50.0
0.010	1	0.1	1	1	100.0

whom often come in later under 1, and (*b*) 20 per cent. who remain indifferent.

3. Those who are apparently made worse (15 per cent.); that is, under the use of the same dosage as the others in the class, but who not only come in under 2, but some even under 1, if the tuberculin is given in doses attenuated enough to meet their hypersensitiveness.

TABLE 5.—NUMBER OF PATIENTS AND THEIR HIGHEST DOSE, ALSO PERCENTAGE OF HIGHEST DOSE REACHED TO TOTAL NUMBER GIVEN OF THAT DOSE
(O. T. TUBERCULIN)

Highest Dose Gm.	Patients No.	Patients Per Cent.	Total No. Given of that Dose	Times this Was the Highest Dose Reached No.	Times this Was the Highest Dose Reached Per Cent.
0.000,001—	4	0.7	4	4	100.0
0.000,001	45	7.8	262	45	17.1
0.000,002	19	3.3	181	19	10.4
0.000,004	15	2.6	157	15	9.5
0.000,008	17	2.9	153	17	11.1
0.000,016	18	3.1	165	18	10.9
0.000,032	18	3.1	130	18	13.8
0.000,064	21	3.6	103	21	20.3
0.000,1	9	1.5	146	9	6.1
0.000,2	29	3.5	126	29	15.8
0.000,4	16	2.8	83	16	19.2
0.000,8	9	1.5	66	9	13.6
0.001	0	...	0	..	....
0.001.25	1	0.1	1	1	100.0
0.001.5	6	0.1	42	6	14.2
0.001.75	0	...	11	..	....
0.002	0	...	0	..	....
0.003	3	1.5	43	9	20.9
0.004	0	...	0	..	....
0.005	0	...	0	..	....
0.006	10	1.7	15	10	66.6
0.007	3	0.5	11	3	27.2
0.008	0	...	0	..	....
0.009	0	...	0	..	....
0.010	1	0.1	1	1	100.0

4. Effect of tuberculin on localized visible tuberculosis such as fistulae in ano, glands, etc., which is specific, particularly in the case of tuberculous glands in the neck, in which condition tuberculin is by far the treatment of choice.

While the number of the distinctly improved and apparently cured under sanatorium care and tuberculin does not appear to be any greater than under sanatorium

care alone, the value of the former is in bringing up to the same percentage a type of case that under sanatorium care only would by no means fare so well, if clinical experience is worth anything.

CONCLUSIONS

As there is no way of telling beforehand what case of pulmonary tuberculosis will benefit the most from tuberculin, every patient with that disease should be treated with tuberculin, and only those ruled out who seem unsuitable by reason of their hypersensitiveness, as proved after injection; and even these may receive all the benefits that tuberculin has to offer, if it is given in small enough doses very slowly increased.

I wish to acknowledge my indebtedness for valuable aid in the work on which this paper is based to Dr. Herman M. Biggs, who as general medical officer of the Department of Health spared no effort to further the scientific interests of the institution; to Drs. Edward S. McSweeny, Walter L. Rathbun and William H. White, my associates at the sanatorium, and to Drs. Charles F. Bolduan, assistant to the general medical officer, and Robert J. Wilson, superintendent to the hospitals of the department, for much valuable criticism of this paper.

16 East Eighty-Seventh Street.

AN INTERESTING CASE OF CHRONIC LEAD-POISONING WITH RELAPSE FOLLOWING FRESH EXPOSURE *

J. M. ANDERS, M.D., LL.D.
PHILADELPHIA

The following case, showing the effects of lead intoxication, principally on the nervous system, is presented here because of the fact that it illustrates some interesting points in the clinical course and urinary findings of the condition:

History.—Mr. N. E. H., aged 45, weight 151 pounds, height 5 feet 9 inches, was referred to me, Nov. 21, 1913, by Dr. W. H. Hartzell. The family history was negative except that the patient's father, who was a worker in lead, died of paresis due to plumbism. He had had no lead colic, but wrist-drop, ptosis of one eyelid and optic atrophy followed by symptoms of general paralysis of the insane. No members of the family, other than father and son (the patient) were exposed to lead, and hence no additional cases of intoxication occurred in the household. We may, however, assume that susceptibility, which varies markedly in different families, was fairly well marked in that of the patient since he employed the usual precautionary measures with minute care. The patient had had the usual infections of childhood, and had been subject to frequent "attacks of biliousness" since early adolescence. He was married and had been a traveling salesman for the past fifteen years, during which time he had not been in contact with lead except for one and a half days (as described below). From 14 to 30 years of age, however, he had been a house- and sign-painter. During the first seven years of this period, not all his time was devoted to his trade, but from 21 to 30 years of age it was. The patient had used three cups of coffee a day and alcohol in moderation, but no tobacco. He walks from 3 to 5 miles daily in the open air, but otherwise takes no exercise. He denies venereal infection.

Present Illness.—At about the time he began to work in lead, he began to be subject to attacks of "biliousness," which recurred frequently at first but later at longer intervals until four years ago, when they disappeared for one year. The symptoms in detail manifested during an attack of "biliousness" are, in the order of development, diplopia, transitory blindness, headache, dizziness, aphasia and repeated vomiting, followed by abdominal soreness lasting one week. The arms become numb and the heart-beat drops frequently to 46 a minute.

Three years ago Mr. H. sandpapered the casings of his home, which was attended with the production of much dust. Following this marked exposure, which lasted only one and a half days, he painted the house alone. Almost immediately the attacks returned in a modified form: vomiting and abdominal soreness were absent, while the diplopia, transitory blindness, vertigo and aphasia were present. At the same time (three years ago) he developed lead arthralgia affecting the entire right arm and the sacral region. All of the foregoing symptoms after persisting a year and a half were relieved by treatment directed to the lead intoxication, principally the use of potassium iodid, lasting four months. The symptoms, however, recurred later, and four months ago he resumed the treatment with immediate improvement, but he soon gave it up. During the past week daily slight attacks occurred. The average duration of one of the paroxysms described above is at present about one hour, but formerly it was not so brief—from two to three hours.

Laboratory Examinations.—An examination of the urine resulted as follows: specific gravity 1.020, faintly acid; albumin, glucose, indican and casts were all absent; a few leukocytes and epithelial cells were present. Dec. 5, 1913, Dr. Matthew Beardwood reported that he had found an appreciable quantity of lead in a specimen of the urine which had been submitted to him for chemical analysis.

Blood: Erythrocytes, 4,990,000; hemoglobin, 96 per cent.; leukocytes, 7,409. There was no basic granulation of the erythrocytes.

Physical Examination: This revealed an adult white male, moderately well nourished, musculature fairly good; no evidence of any palsies; reflexes: knee-jerks diminished, Babinski and ankle-clonus absent.

Local Examination: There was no lead-line on the gums, but a faint bluish-black line around a single decayed tooth. Dr. William L. Estes had observed a distinct lead-line in 1912. The heart and lungs were normal. Blood-pressure: systolic, 122 mm. Hg; diastolic, 90 mm. Hg. Abdomen: The liver was slightly enlarged downward; otherwise the examination was negative in its results.

Eyes: These showed interesting changes, as shown by Dr. L. Webster Fox's report, which follows: Marked astigmatism in both eyes and a low-grade muscle insufficiency. Visual fields normal (no reversal of color field). Ophthalmoscopic examination showed marked stasis of the veins, sheaths of both optic nerves thickened, showing evidence of chronic meningeal thickening.

It may be doubted by some whether this case is really one of lead intoxication. The absence of basophilia, however, does not rule out plumbism, for it is generally held at present that it is of little or no diagnostic value. Moreover, Oliver[1] failed to find granules in the blood in 40 per cent. of the cases. Again, the absence of the history of either lead colic or palsies during the time that his occupation entailed exposure to lead, weighs against the diagnosis of saturnism, but does not exclude the condition, since these typical manifestations have been absent in well-authenticated cases to be found in the literature. No evidences of contracted kidney existed in the case here reported. The majority of cases of chronic lead-poisoning that show a progressive tendency, it is true, develop chronic interstitial nephritis, which commonly proves to be a fatal

* Read before the Section on Medicine, College of Physicians, Feb. 24, 1914.

1. Oliver: Quoted by Alice Hamilton: Industrial Lead-Poisoning in the Light of Recent Studies, THE JOURNAL A. M. A., Sept. 7, 1912, p. 777.

complication, or in other words, the cause of death. In this connection it is to be recollected that my case had improved greatly prior to a fresh exposure to the influence of lead three years ago, and since then, while the peculiar attacks described above recurred in a modified form, they were at no time indicative of a grave tendency. Again, well-marked typical cases of lead intoxication do occur without ensuing chronic interstitial nephritis.

While the diagnosis is not based on the history of previous exposure to lead alone on account of occupation, the anamnesis and the attacks which presented such features as diplopia, transitory blindness, dizziness, aphasia, headache, and, for a number of years, vomiting, as well as the finding of the presence of lead in the urine, considered collectively, seemed to warrant an absolute diagnosis. This diagnosis was further confirmed by the previous observation of Dr. Estes of a lead-line on the gums, and the result of the eliminative treatment usually adopted in cases of chronic plumbism. My own case, and the same is true of any obscure condition, makes clear the importance of a careful inquiry into the occupation, past and present, of the patient. Again, an examination of the urine for lead is rarely carried out in the absence of a knowledge of occupational exposure, but it should be undertaken in every obscure condition in which the symptoms are even feebly suggestive of the existence of saturnism.

It is undoubted that lead once absorbed into the system may remain latent for an indefinite period of time "and then again make itself felt" (Hamilton). My own case confirms the observation that brief reexposure to lead, even many years after recovery or cessation of contact with the metal, may result promptly in a recurrence of the symptoms of plumbism. The symptom-complex in the case here reported was quite unique, and it may be questioned whether certain features accompanying the so-called attacks, more particularly the vomiting, aphasia and bradycardia, were not to be attributed to some cause other than chronic lead-poisoning. On the other hand, the diplopia, transitory blindness, headache and dizziness are not unusual in this condition. I have found no reference in literature to aphasia, which was present in my case, as a symptom of saturnism, except in cases attended with well-marked arteriosclerosis.

The brevity of the attacks in my case—from one to three hours—can be satisfactorily explained only on the view of spasm, since there was no evidence of sclerosis of the blood-vessels, unless localized to the cerebral region. For example, the vertigo, associated as it was with slow pulse during the attacks, might be with fair justification attributed to arteriosclerosis affecting the vessels of the brain. The arrest of the attacks, temporarily at least, as the result of appropriate treatment, including glasses, lends support to the spastic nature of the aphasia, and this exciting cause of aphasia is recognized in connection with arteriosclerosis of the cerebral vessels by certain writers.

1605 Walnut Street.

Dr. Bell's Contribution to Radium Technology.—In the *Scientific American* of Sept. 12, 1903, there appeared a letter from Dr. Alexander Graham Bell, in which he suggested the embedding of radium in bodily tissue as a curative agent for deep-seated cancers. This is probably the first suggestion of a method of treatment which is now in vogue among medical men.—*Scient. Am.*

THE TECHNIC OF THE INTRADURAL INJECTIONS OF NEOSALVARSAN IN SYPHILIS OF THE NERVOUS SYSTEM

A PRELIMINARY REPORT

UDO J WILE, A.B., M.D.
Professor of Dermatology and Syphilology, University of Michigan, Department of Medicine and Surgery
ANN ARBOR, MICH.

While it is an undeniable fact that in syphilis of the nervous system the intravenous injection of neosalvarsan is capable of producing subjective improvement, nevertheless the peculiar isolation of the nervous system, and the relative impermeability of its membranes render treatment directed toward this system of little actual avail except subjectively. In tabes, it is true, the pains are frequently ameliorated, the gait is improved, and in rare instances optic atrophy is said to have been arrested by the intravenous injection of salvarsan. The proof, however, that these changes are not lasting, and that they really affect the progress of the disease but little, lies in the objective findings in the spinal fluid. These findings are little, if at all, changed by the treatment intravenously administered. Particularly is this true of the late manifestations of central nervous syphilis. It would seem, therefore, that the future treatment of syphilis in the central nervous system lies in the direct application of the remedy to the nervous tissue itself. The difficulties of such a method of procedure lie not only in the difficulty of administration, but also in the high susceptibility of the nervous tissue itself to foreign substances.

The intradural injection of old salvarsan is impossible, on account of its caustic action from the presence in it of caustic soda necessary to render it neutral. Neosalvarsan injected into the spinal canal was first tried by Wechselmann[1] and then by Marinesco.[2] Both used aqueous solutions, and after their injections it was observed that the patients suffered extreme headache, vomiting, extreme neuralgic pains in the legs, and occasional troubles of urination, all associated with a rise of temperature. Marie and Levaditi[3] also treated cases of general paralysis with injections of neosalvarsan varying in size from 5 mg. to 4 cg. Their results were rather dubious. The results, therefore, of this treatment were in the main unsatisfactory. The treatment of such lesions by salvarsanized serum as practiced by Swift and Ellis[4] has in some hands been of exceedingly great benefit. *A priori* it would seem logical to assume that if treatment by the intradural injections of neosalvarsan could be borne, it would be the method of choice over any other method.

During the past summer I had the opportunity of witnessing intradural injections as practiced by my friend, Dr. Paul Ravaut, at the Hôpital St. Louis, in Paris, in cases of syphilis of the central nervous system. Dr. Ravaut suggested that I carry on the work along his lines in this country.

According to Ravaut, the intradural injections are poorly tolerated on account of technical difficulties rather than on account of the irritative nature of the drug itself. In 1901, those who were interested in

1. Wechselmann: Deutsch. med. Wchnschr., 1912, xxxviii, 1446.
2. Marinesco: Ztschr. f. phys. u. diät. Therap., 1913, xvii, 194.
3. Marie and Levaditi: Bull. et mém. Soc. méd. d. hôp. de Paris, Nov. 18, 1913.
4. Swift and Ellis: New York Med. Jour., 1912, xcvi, 53. Ibid., München. med. Wchnschr., 1913, xxxvi, 1977. Ibid., München. med. Wchnschr., 1913, xxxvii, 2054.

injections of cocain for spinal anesthesia found that following the injection of a few centimeters of a cocain solution, patients thus treated suffered from vomiting, fever, headache and more or less neuralgic pain and troubles of urination. At first the origin of these accidents was attributed to the cocain itself or to an idiosyncrasy on the part of the patient. Ravaut and Auberg,[5] in studying these cases, found that this train of symptoms was actually due to an aseptic, sterile meningitis. They were able to demonstrate clearly, in the spinal fluid, cytologic reactions which proved this contention. They established the fact that a watery solution which was not isotonic could produce meningeal irritation, and by substituting cocain in isotonic solutions for solutions previously used, they were able to show that the patients tolerated this with the desired anesthesia and with perfect impunity to harmful results.

In 1907 Ravaut[6] showed that hypertonic concentrated solutions were even better tolerated than isotonic solutions. These by reason of their density are not easily diffused. Thus he was able to produce complete genital and perineal anesthesia by the injection of a single drop of water containing 2 cg. of cocain or novocain. If patients thus treated, however, were placed in the Trendelenburg position, there was a very rapid diffusion of the cocain toward the upper portion of the cord and brain, resulting in nausea and vomiting constantly and within a short time. According to the position of the patient, therefore, it became possible to direct the solution toward the inferior or superior portions of the nervous system.

Ravaut employed the method of concentrated hypertonic solutions in the injection of neosalvarsan in the spinal cord, and he has recently published his results, with an account of patients thus treated.[7] Using the following method, as outlined to me by Dr. Ravaut, I have been employing this treatemnt at the University Hospital during the past nine months.

The solution used is a 6 per cent. solution of neosalvarsan in distilled water. This solution is hypertonic. Each drop of such a solution would contain 3 mg. of neosalvarsan. The dosage injected is from 3 to 12 mg.; that is, from 1 to 4 drops of the solution. The solution is made up as follows:

An ampule containing 0.3 gm. of neosalvarsan is dissolved in 5 c.c. of freshly distilled water. If the ampule contains 0.6 gm., 10 c.c. of water are used. In both solutions each drop will contain 3 mg. of the drug. The syringe employed for the injection is accurately graduated in drops. The patient is then placed in a position for a lumbar puncture, either sitting or lying, according to the choice of the operator. The puncture is then made with a needle, the end of which fits the graduated syringe. After a few drops of spinal fluid have flowed out of the cannula, or a greater quantity if a diagnostic puncture is desired at this time, the syringe is fitted into the needle, and the fluid is allowed to run back into the syringe barrel, thus mixing with the amount of the drug in the barrel. The mixed spinal fluid and drug is then gently forced into the canal, and slight suction is made on the syringe to withdraw a second amount of fluid, which washes out the needle. This is then reintroduced, the needle is quickly withdrawn and the patient placed in the Trendelenburg position, in which position he is allowed to remain for at least one hour.

Injections thus given are exceedingly well tolerated. At most there is a slight amount of neuralgic pain, which passes off in a short time. For the most part, however, if carried out properly, the injections are quite painless. A slight amount of neuralgic pain is particularly likely to occur in tabetics. Vomiting does not occur at all. A slight amount of headache such as accompanies a lumbar puncture is, however, sometimes encountered. A slight tendency to difficulty in urination is occasionally experienced a day or two following the injection. In two cases of my own, it persisted, but in both of these my technic was at fault. I have carried out this treatment in a number of cases, and an account of these will follow in a report to be read before the Section on Dermatology of the American Medical Association in June.

5. Ravaut and Auberg: Compt. rend. Soc. de biol., 1901, liii, 637.
6. Ravaut: Compt. rend. Soc. de biol., 1907, lxii, 1159.
7. Ravaut: Ann. de méd., 1914, No. 1, p. 49.

AN UNUSUAL CASE OF VACCINE ANAPHYLAXIS *

RAYMOND WALLACE, M.D.
Surgeon to Baroness Erlanger Hospital
CHATTANOOGA, TENN.

Anaphylactic reactions following the injection of horse-serum in sensitized individuals are of common occurrence, and the various phenomena in animals sensitized to foreign proteins have been extensively studied. Great effort is now being made to unify these manifestations of anaphylaxis and immunity on a single basis, despite their many striking variations.

The introduction into the human circulation of foreign proteins, in the form of bacterial vaccines, is usually in such small amount that there is but slight local and usually no appreciable general reaction.

The following case is of special consequence because of its rarity in the literature, both of anaphylaxis and of vaccine therapy:

Mrs. S. J. P., aged 53, presented a small furuncle on the left forearm and an infected hair follicle in the right axilla. Three years previously she had suffered from boils and was effectively cured with four serial doses of staphylo-streptobacterin. Similar treatment was requested in this instance, and an injection of fresh stock vaccine, containing 100,000,000 streptococci, 400,000,000 staphylococci and 200,000,000 colon bacilli was given. There was only slight local reaction, and considerable improvement resulted in the existing furuncles. On the eighth day at 10 a. m. double the dose of the same vaccine was administered; at 4 p. m. there was a diffuse erythema about the lesion on the forearm, and an angry spreading erythema covering the right axilla, upper arm and breast. A nurse was at once placed in charge and records made at three-hour intervals. By 9 p. m. a scarlatinaform erythema had involved the entire trunk and parts of the extremities. There was no sore throat or constitutional disturbance, and the temperature and pulse were normal at all times. On the third day the entire body was involved, the advancing areas were macular, but rapidly became confluent and intensely red, the turgidity of the skin and pruritus was only momentarily relieved by lotions, unguents and dusting-powders, and the suffering was intense. The neck, trunk and parts of the extremities now presented the appearance of a fulminating erysipelas.

On the administration of free catharsis and alkalies, the eruption gradually faded, and on the tenth day there remained but slight erythema and induration about the original lesions. The temperature and pulse at no time varied from normal; there were no throat symptoms, joint pains or other systemic

* Reported before the Chattanooga Academy of Medicine, Feb. 20, 1914.

disturbances. Leukocyte-counts showed but slight numerical or differential changes from normal; the urine contained no albumin, sugar or indican. The erythema, however, was so intense and indurated, that as it disappeared there was considerable fissuring of the skin in the flexures and a mild desquamation in many parts.

Such hypersusceptibility to bacterial proteins as occurred here, is, from the literature, exceedingly rare. With marked anaphylactic reaction, the absence of systemic upset is extraordinary.

The phenomenon itself is undoubted. It occurred as an intense scarlatinaform erythema, universal in extent and without constitutional disturbance. It was not an exanthematous disease, nor was the eruption related as at times, to parenteral protein digestion.

EXOPHTHALMIC GOITER AS A CLINICAL MANIFESTATION OF HEREDITARY SYPHILIS

OSCAR CLARK, M.D., RIO DE JANEIRO, BRAZIL

I have had the opportunity, during the last five years, of observing an interesting case of exophthalmic goiter in a woman, aged 24, in whom there can be no doubt that it is a late clinical manifestation of hereditary syphilis. The patient began about five years ago to suffer from palpitation tachycardia, accompanied by violent attacks of nervousness, while her mother also called attention to a swelling of the neck. There was very little protrusion of the eyes.

Four years ago when I was first consulted (shortly before leaving on a journey to Europe, during which I was kept informed of the progress of the case), the clinical symptoms had become decisive and the syndrome grew steadily worse until the patient fell into a drowsy, almost comatose condition, with pulse over 200 beats, the sphincters quite paralyzed, with continuous vomiting lasting a fortnight. Dr. Sylvio Moniz, a well-known Brazilian physician, was summoned to the patient in this very bad condition and had the happy thought of trying the Wassermann reaction. To this he was led by the "Olympic forehead" and the *crâne natiforme*, being told also that the girl when 12 years old, had had several "epileptiform" fits. The Wassermann reaction was strongly positive, both with the patient's mother and with the patient herself.

With this diagnosis, Dr. Sylvio Moniz prescribed mercurial frictions and epinephrin (1:1,000 solution, 20 drops three times daily) to relieve the arterial hypertension and the vomiting; the latter rapidly ceased, while the patient had in two days recovered consciousness.

After eight days the pulse was just 150 and the goiter sensibly smaller, while the protrusion of the eyes was a little better. After thirty frictions the patient was much better both as regards the hyperthyroidic manifestation and the general health. The next month she was given two injections of salvarsan (0.3 and 0.6 gm.). By the third month she had quite recovered. Neither the goiter nor the protrusion of the eyes was to be seen. The pulse was 75 beats and the nervousness had disappeared.

The patient returned to North Brazil (she was at Rio de Janeiro), and ceased the mercurial and salvarsan treatment. Twelve months later, however, the Merseburger triad reappeared but a fresh recovery has been effected by the same treatment.

I think that this case is undoubtedly one of hereditary syphilis appearing late, as Dr. Sylvio Moniz made every laboratory test in order to exclude tuberculosis, malaria, etc. The father is dead, of what cause I am not aware; the positive Wassermann in the mother has been mentioned. The patient is from the best society and is virgin and there can be no suspicion of syphilis by contagion. She has never had any clinical sign of infection, but on the other hand, presents skeletal stigmata, and, as previously remarked, had epileptiform fits at the age of 12.

A CASE OF DISSEMINATED CARCINOMA OF THE BREASTS AND AXILLAE IMPROVED BY RADIUM *

SINCLAIR TOUSEY, M.D., NEW YORK

The patient, a man, was referred to me by Dr. Beder. The right mammary gland and nipple had ulcerated away and there was another ulcer below that region. Both were adherent and covered with a red parchment-like epidermis and were surrounded by an indurated margin projecting ½ inch above the level of the skin. Nodular masses larger than a hickory-nut but smaller than a hen's egg were present in both axillae and were widely scattered over the front of the chest. On the right side of the chest the skin over many of these was red, and they were evidently in a way to break down into ulcers. On the left side the nodules were smaller, white, and extended from the nipple in a cord-like mass up into the axilla. The disease had been of several years' duration; no operation even for the removal of a microscopic specimen had been permitted. There was no history of syphilis, and two careful Wassermann examinations were negative. The clinical diagnosis had always been carcinoma, and if so it was evidently similar to the cases of epithelioma cicatrisans, which are sometimes active for as long as eight years before causing death. My patient had lost weight and strength, the skin was adherent to the chest wall, and the use of the right arm was interfered with.

Treatment was by contact applications of a mass of chemically pure radium sulphate containing 20 mg. of radium element having an activity of 20,000 microcuries, in a sealed glass tube 0.3 mm. in thickness, enclosed in aluminum 0.5 mm. thick and in thin, soft rubber. Treatments were three times a week for a month and after that once a week. At each treatment several individual nodules or parts of the nodular borders of the ulcers received an application equal to a total of fifteen minutes in each place. During the first month every growth on the right side had been treated in this way and also the floor of the ulcers, but the left side had not been treated. At the end of this time all the nodular masses on the right side were perfectly flat, and the cicatrized ulcers were no longer adherent but could be raised and bent double. The arm could be raised to the greatest extent. The patient felt stronger and had gained 5 pounds in weight. The left side, untreated, showed marked improvement, strengthening my belief that the application of the Roentgen ray and radium rays to cancer develops some antibody which is carried through the system and in proper dosage produces benefit to cancer foci beyond the effective reach of the direct rays themselves.

Treatment was then begun on the left side, and the subsequent course of the case has been one of steady progress.

850 Seventh Avenue.

The Favorite Formula or Pet Prescription.—Every physician, whether optimistic or pessimistic in his general attitude toward the materia medica, usually has a favorite formula—a certain combination of drugs which he uses for many and varied selected conditions. It is his favorite formula; here is mine:

		gm. or c.c.	
℞	Codein sulphate	1	gr. ii
	Acetphenetidin	75	gr. xii
	Aspirin	2	gr. xxxii
	Chinchonidin salicylate	5	gr. viii

Make eight capsules. One every hour or two.

With this formula, under appropriate conditions, the cure of patients becomes strictly a case of *cito, tuto et jucunde*, as we are admonished it should be. It will symptomatically cure grip, and if given on the first day will in many cases produce such an improvement by the second as to prevent its complications and incidentally—*malum in se*—do away with the doctor. I have used the favorite formula with satisfaction in most inflammations. There are other indications naturally suggested by its ingredients to which it seems excellently adapted and which it is unnecessary to enumerate.—WILFRED M. BARTON, M.D., Washington, D. C.

* Case shown at the Surgical Section, New York Academy of Medicine, March 6, 1914.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

SEROBACTERINS (See THE JOURNAL, Feb. 7, 1914, p. 457). The Council has at present no means of determining the identity and purity of serobacterins; they must be used on the guarantee of the manufacturer alone and they must be used, therefore, with due caution.

H. K. Mulford Co., Philadelphia.

Scarlatina Strepto-Serobacterin Mulford (Immunizing).—(Sensitized Scarlatina Streptococcic Vaccine, Immunizing).—Each package contains three syringes of Scarlatina Strepto-Serobacterin as follows: Syringe 1, 1,000 million killed sensitized streptococci; Syringe 2, 2,000 million killed sensitized streptococci; Syringe 3, 2,000 million killed sensitized streptococci.

PHENOLPHTHALEIN-AGAR. — Phenolphthalein-agar is agar-agar impregnated with phenolphthalein, 100 Gm. containing 3 Gm. of phenolphthalein.

Actions and Uses.—Phenolphthalein-agar is claimed to have the properties of agar-agar (which see) augmented by the action of phenolphthalein (which see).

Dosage.—1 Gm. (15 grains) twice daily, after breakfast and supper, increased or diminished according to requirements.

Manufactured by the Chemische Fabrik Helfenberg, A. G., Helfenberg, Saxony, Germany (Reinschild Chemical Co., New York). U. S. patent No. 943,163 (Dec. 14, 1909; expires 1926). No U. S. trademark.

Phenolphthalein-agar is prepared by impregnating 1,000 Gm. of agar-agar with a solution obtained by dissolving 30 Gm. of phenolphthalein in a mixture of 2,000 Cc. of water and 700 Cc. of alcohol and drying the impregnated agar-agar slowly.

Therapeutics

THE TUBERCULOSIS PROBLEM

(Continued from page 1093)

GENERAL MEDICATION IN THE TREATMENT OF TUBERCULOSIS

In the first place, drugs, as such, cannot cure, and are not antidotes to this disease. On the other hand, much can be done, with proper medication, to aid the physiologic processes.

Calcium.—It has long been thought that patients suffering from tuberculosis have previously become demineralized. This means especially that they have lost their calcium, and perhaps phosphorus, equilibrium. It is also true that tuberculous lesions heal by more or less calcification. Also, patients are more likely to have hemorrhages, if their calcium blood-content is diminished. Certain it is that patients, especially children, often improve with increased amounts of calcium in their food or as a medicament. One of the great values of a proper amount of milk for tuberculous patients is probably the calcium and phosphate content. On the other hand, many patients improve by the administration of a calcium salt, and none is better than calcium glycerophosphate, in 0.30-gm. (5-grain) doses, three times a day, after meals.

Galliot[1] advises the following combination for children who are suffering from tuberculosis: calcium carbonate and calcium phosphate, each from 20 to 30 cg. (from 3 to 5 grains); magnesium chlorid from 10 to 20 cg. (from 1½ to 3 grains); magnesium oxid from 5 to 10 cg. (from about ¾ to 1½ grains). This he administers two or three times a day. It has often been found that tuberculous patients improve under the administration of thymus gland. This is rich in nucleoproteins, and therefore offers phosphorus in assimilable form, and also it seems to promote the calcium metabolism. This gland is very active during childhood, when the greatest amount of bone growth occurs.

Creosote.—Creosote has been long recommended and much used, and its action in tuberculosis has been lauded by able medical men.

A preparation of tar was perhaps first used in 1817 by a Dr. Crichton, physician to the Empress of Russia; and in this country it was perhaps first used in 1834 by a Dr. Morton of Philadelphia. Creosote was separated from wood-tar by Reichenbach of Blankso in 1832, and received its name because it preserved meat. Two years later Runge extracted carbolic acid from coal-tar, which Gerhardt called phenol. In 1877 Bouchard and Gimbert began to use, in tuberculosis, a creosote prepared from beechwood.

There is a great difference of opinion among clinicians as to the value of creosote in pulmonary tuberculosis. Many physicians never use it in this disease, and others push it to such an extent that the patient is practically saturated with it, and his room and almost the whole house reeks with the odor of creosote. It seems to be true that many patients have improved appetite under its stimulant or irritant action in the stomach. It may also, for a time, improve digestion, and the patient often adds weight. During this period there is frequently a lessening of the bronchitis, and therefore a decreased expectoration, and with this decrease of the secondary (streptococcic) infection, there is likely to be less fever and therefore less sweating. It is so rare, however, for a patient to take creosote and not adopt the rest cure and other measures that go toward improving his condition, that it is not fair to attribute such improvement to the creosote. Creosote is also more or less of an intestinal antiseptic, and hence bacteria-laden sputum that may be inadvertently swallowed may be rendered harmless in the upper part of the intestine. Be that as it may, it is a fact that good bowel activity, an improvement in the intestinal digestion, and the prevention of fermentation or putrefaction in the intestine, by many so-called bowel antiseptics, will all cause an improvement in the tuberculous patient.

Unfortunately, as frequent aftermaths of the good action of creosote the pancreas becomes overstimulated by the drug and does not furnish its secretion properly; there is intestinal indigestion; the liver is disturbed; there are stomach indigestion and loss of appetite, and the patient will lose weight faster than he gained it under the creosote treatment. Too much creosote will also irritate the kidneys, and may cause albuminuria. In other words, it generally does not seem wise to recommend creosote, as such, internally in pulmonary tuberculosis. As an ingredient of an inhalant mixture it may be of value, as a positive antiseptic to the upper

1. Galliot: Arch. de méd. d. enf., 1913, xvi, 4, p. 289.

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air-passages and the trachea and large bronchial tubes. If there is fetid, purulent expectoration such inhalations may be of advantage.

Guaiacol frequently in the form of a benzoate of guaiacol has been used for tuberculosis, but guaiacol has no advantage over creosote in the treatment of tuberculosis. The exponents of the creosote treatment believe that the drug should be begun in small doses and gradually increased to the point of the patient's tolerance. Tolerance means that the appetite is not interfered with, that there is no nausea or vomiting, and that the urine does not become dark and show albumin.

The symptoms of creosote poisoning are similar to phenol poisoning. From its overaction the patient not only has gastritis and intestinal disturbances, but also dark urine, perhaps nephritis, and dizziness and sweating.

Ichthyol.—The internal administration of ichthyol in tuberculosis seems to have its only advantage in acting as a bowel antiseptic. In this manner it may do some good, but as patients generally eructate it, it is exceedingly unpleasant treatment. Other methods of preventing intestinal disturbances, such as ordinary laxatives, a cathartic perhaps once a week, the administration of soured milk, yeast or lactic acid bacilli, if any such treatments are indicated, or salol if needed, are all better than the ichthyol.

Cod-Liver Oil.—This oil is a food, and as such has its advantages. A small dose of cod-liver oil is as easily taken as a large dose of some emulsion which contains but little of the oil. In other words, if one desires to give cod-liver oil, it may be given; but, as previously stated, other oils and fats are of as much advantage, and it certainly is not wise to load the system with large amounts of bile-salts. There is no difference in the effect of Norwegian cod-liver oil and the oil prepared on our own shores.

The Hypophosphites.—The hypophosphite treatment of pulmonary tuberculosis has already been discussed.[2] There is no chemical, physiologic or specific excuse for giving the hypophosphites; the success of treatment of lung conditions with hypophosphites is a fallacy. It is not intended to state that some phosphorus and some calcium-bearing preparations and foods containing these elements may not be of value, but one is not justified in expecting results from any hypophosphite combination of these or other elements.

Arsenic.—Arsenic has been advised for years in many lung conditions. It has been stated that the arsenic eaters of France and Switzerland have been more or less immune from tuberculosis. It has been stated that patients breathe more freely and better under the influence of arsenic. However this may be, in the treatment of pulmonary tuberculosis the value of arsenic is very slight. It seems to stimulate the production of blood-corpuscles, both red and white, and in small doses it may stimulate the appetite. In any large doses arsenic is harmful, tending to cause secondary destruction of red blood-corpuscles, to irritate the kidneys, to upset the digestion, and when pushed, may cause multiple neuritis. In other words, arsenic is a poison, and should not be administered to a patient unless there is a tangible, positive indication. Arsenic has come more or less into prominence as a germicide since the wonderful activity shown by salvarsan in the treatment of syphilis. It has long been known that arsenic may sometimes kill the malarial germ; it seems also to have some activity in certain tropical germ diseases. But arsenic is such a stimulant to glandular tissue, especially to the lymph-nodes, that it would seem unwise, theoretically, to give a sufficient amount of it to cause excessive activity of these glands, with the probable pouring out of many tubercle bacilli into the lymph- and blood-streams. In good-sized doses arsenic could probably do harm just as large doses of tuberculin will do harm.

Iodin.—For many years this element in some form has been given frequently for various kinds of tuberculosis, especially glandular tuberculosis. It was recently lauded for pulmonary tuberculosis by Boudreau.[3] He gives the French tincture (1 part of iodin to 12 parts of 90 per cent. alcohol), and commencing with small doses runs it up to 100 drops a day, administered in various beverages. After ten years of trial, he finds such treatment of value not only in pulmonary tuberculosis, but also in renal tuberculosis.

Although there are no other reports concerning this treatment, harm has been done in pulmonary tuberculosis by the administration of an iodid. It seems to be a stimulant to the tubercles, not unlike tuberculin, and may cause a lighting up of a quiescent tuberculous process or a serious exacerbation of a slow-going infection. The stimulant action on glands is well known, and tuberculous glands may be overstimulated to the harm of the patient. In other words, iodids should not be used carelessly in pulmonary and glandular tuberculosis. This does not militate against the possibility of small, very slowly increasing doses of iodin doing the same good that graded doses of tuberculin do, but the treatment should be most carefully watched.

Thyroid gland substance has been given in tuberculosis, but it is rarely indicated, though the thyroid is probably often affected in tuberculosis.

Though the syrup of the iodid of iron has long been given in glandular enlargements in children, experienced observers have found no greater benefit from it than from some other form of iron.

(To be continued)

2. The Fallacy of Hypophosphite Treatment, Therapeutics, THE JOURNAL A. M. A., March 8, 1913, p. 747.

3. Boudreau: Jour. de méd. de Bordeaux, Jan. 4, 1914.

First Aid in Railway Accidents.—German railways provide a first-aid train in case of railway accidents. It consists of a locomotive and two cars, the one a work car with workmen and all necessary apparatus for clearing the tracks, releasing wounded people who are caught in the wreckage, repairing the track and setting traffic in motion again. The other is a hospital car, provided with all necessary instruments for emergency operations, bandages, dressings, medicines, operating table, stretchers and eight beds in which patients can be transported to the nearest hospital. The personnel of these cars, workmen, doctors, nurses, etc., are all within call so that they can be reached very quickly after news of an accident is received, and they have drills in practice so that when an actual call comes they are expert in preparing for action quickly, sterilizing, getting operating and anesthesia tables, sutures, instruments, etc., ready. Every preparation is made on the way to the scene of the accident, so that they are ready to begin work when they arrive. These trains are stationed at frequent enough intervals along the road, so that the most isolated spot can be reached within two hours after an accident has occurred. Dr. Gilbert describes their work in *Archiv für Rettungswesen*, 1913, i, 140, and gives a further account not only of the medical work but of the work of the train crew in notifying on-coming trains, sending word to the railway officials and families of the dead and wounded, clearing the tracks for traffic and all the multitudinous details that have to be attended to in such catastrophes.

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SATURDAY, APRIL 11, 1914

DISEASES DUE TO DIETARY DEFICIENCIES

The more intimate knowledge which has been gained in recent years regarding the underlying causes of certain hitherto little-understood diseases promises to uproot and displace, or at any rate to supplement, some of the older notions that have been current. The modern development of pathology has left such an indelible impression on the study of medicine that its special point of view has long remained the dominant one, and in most cases properly so. Our diagnostic powers have been widened enormously, throughout the nineteenth century, by what has been termed the clinicopathologic investigation of disease. Osler remarks that the physician of to-day who wishes to obtain a sound knowledge of the natural history of disease must adopt Morgagni's method of "anatomic thinking." The long-prevalent influence of pathologic anatomy made it seem almost inevitable that some defect of bodily structure be found with which to associate the incidence of disease either directly or through predisposition. When modern bacteriology revolutionized the conception of the etiology of infectious diseases by giving concrete proof of the existence of the long-suspected *contagium vivum*, modern clinical medicine became still further modified. This fruitful knowledge has resulted in emphasizing the search for some agency of a positive kind in the case of every malady. As Hopkins says, we perforce recognize inherent deficiencies of structure and material in the body; but the essential and immediate cause of any disease we rather seek in the intrusion of some positive factor, some *res noxia*, be it parasite or poison. So completely is this course justified in general, he adds, that there is doubtless an excuse for the present tendency to seek for such an intruder in cases in which there would seem to be little reason to expect its presence, as in certain diseases of nutrition.

The study of the functional perversions of some of the so-called glands of internal secretion has pointed to the pathologic significance of their failure to supply some specific substance or other to the organism. Expressions like "dyspituitarism" and "hypothyroidism" testify to the growing recognition of the occasional lack of products needed to maintain the normal metabolism of the organism. They bring this deficiency into prominence as a factor in the causation of disease. The lacking product in such cases is, however, something which appears to be manufactured in the body itself; and to call attention to its absence or deficiency is merely to direct the search for the etiologic factor one step farther back.

The remarkable newer revelations respecting the causative agencies in the manifestations of beriberi have served more than anything else to direct attention to deficiencies in the diet as an underlying etiologic feature in certain types of disease. By deficiency we do not here mean gross lack of energy-yielding substances — of calories represented by protein, fat and carbohydrate — for starvation, either complete or partial, need not be portrayed as something physiologically unique. It is rather the lack of one or more substances, perhaps of organic nature, which are present in most dietaries in small amounts easily overlooked by the chemist. Specifically in the case of beriberi induced by living on a narrow regimen of milled rice it is some component of the pericarp or millings of the cereal which is removed in the process of manufacture, the replacement of which in the diet averts or cures the pathologic manifestations.[1]

In an interesting discussion of diseases due to deficiencies in diet, Dr. F. G. Hopkins[2] has summed up the situation which has resulted in overcoming the doubt that any important deficiency of the sort mentioned could ever occur in practical dietaries, as follows: The case of beriberi is indeed a very remarkable one. The wide consumption by whole races of a one-sided dietary, the localization of a specific substance in a grain, an artificial treatment of that grain exactly adjusted to remove the substance, and the occurrence of prominent symptoms as the result of its removal — all these coincidences were necessary to yield so striking a proof that a disease may arise from a dietetic deficiency. Without them it is unlikely that a serious discussion of the subject would have arisen.

The substitution of a deficiency factor in place of a toxic substance or an invading organism in the conception of the nature of a group of diseases has promptly afforded a new direction for interest in situations that have long puzzled physicians. The investigation of scorbutus as a deficiency disease has been renewed with exceptional vigor. This is particularly true of the form of infantile scurvy known as Barlow's disease and the somewhat related conditions of atrophic change described as *Mehlnährschaden* by the Germans. The manifesta-

1. The Relation of Rice to Certain Diseases, editorial, THE JOURNAL A. M. A., Feb. 24, 1912, p. 556; Polished Rice, Beriberi and the Nervous System, ibid., July 6, 1912, p. 42; Recent Investigations on Rice Bran in Relation to Disease, ibid., Sept. 14, 1912, p. 883.

2. Hopkins, F. G.: Discussion on Diseases Due to Deficiencies in Diet, Proc. Roy. Soc., Section on Med. Therap. and Pharmacol., 1913, vii, 1.

tions of pellagra are being considered from the same point of view by those who are willing to take a tolerant attitude toward new hypotheses regarding this much-discussed disease. Even rachitis, osteomalacia and spasmophilia have been drawn into consideration.

Enthusiasm for the new has a familiar tendency to swing the pendulum too far in the direction of hastily accepting untested theories. With this warning we would preface a statement regarding the various symptoms of disease that have already been referred to diet-deficiency factors. They have been summarized by Funk[3] as: (1) the syndrome of nerve degeneration with paralysis and contractures; (2) the cardiac syndrome involving dilatation of the right heart, dyspnea, cyanosis and oliguria; (3) anasarca, hydropericardium, hydrothorax, ascites — these three groups pertain to beriberi, for example; (4) the familiar picture of scorbutus with its disturbances in the mouth cavity, multiple hemorrhages in the skin and under the periosteum, as well as typical bone lesions; (5) the pellagra syndrome, with its stomatitis, gastro-intestinal lesions, skin erythema and multiple symptoms related to the nervous system. One fact stands out boldly amid the confusion of theory, namely, that the diseases of deficiency are no longer to be classed in the domain of tropical medicine. They appear with the occurrence of the limited or defective dietary wherever the latter may be found.

It is not an insuperable misfortune that we are at present still very meagerly instructed regarding the chemical nature of these essential components of the dietary for which Funk has promptly coined the term "vitamins." Enough facts are already at hand to furnish the ..eutic guidance. A diet liberal in the sense of variety and including, in the case of adults at least, plant food-products which are now known to contain countless substances other than proteins, fats and carbohydrates, is, to say the least, likely to furnish the desired essentials. For the present we must further bear in mind the experience with experimental scorbutus.[4] The main symptoms may develop in advance of any loss of weight, while, when fresh vegetables are fed, the symptoms may remain absent even if the diet is insufficient in quantity, and weight is rapidly lost. The condition is clearly no result of simple underfeeding. But above all it is important to realize that in different foodstuffs the as yet unknown antiscorbutic substances exhibit varying degrees of stability. Whereas the symptoms are gradually removed through the use of fresh vegetables or vegetable juices, such materials are likewise known to lose their curative powers if heated, dried or kept long. Fresh milk is both antiscorbutic and antineuritic. The question of heating it needs to be considered from this aspect as well as from the present dominant point of view of necessary pasteurization.

3. Funk, C.: Diät und diätetische Behandlung vom Standpunkt der Vitaminlehre, München. med. Wchnschr., Nov. 25, 1913, p. 2614.
4. Experimental Scurvy, editorial, THE JOURNAL A. M. A., Dec. 14, 1912, p. 2155.

The sum and substance of our still limited knowledge in this field is that the "vitamins," if we may employ the convenient term without prejudice as to its import, are widely distributed in nature and are also susceptible to destructive alteration in the modern processes of food manufacture and practical dietetics. The excessive milling of the grains, the undue heating of certain foods, the extraction of as yet unknown components from still other food products in present culinary practice, inappropriate methods of desiccation and preservation — all may contribute in as yet unsuspected ways to damage natural products in respect to their "vitamin" content. The sufferers thereby are those who by force of circumstances or custom are compelled to live on a limited ration. Greater safety lies in variety of diet and dictates the occasional return to the unaltered products of Nature's laboratories until the complete story of the essentials of diet is developed. On the other hand, we must not let the coining of words or the formulation of tentative hypotheses make us oblivious of the persistent shortcomings of our knowledge in this new and interesting field.

THE INDIANA MOTHERS' BABY BOOK

State and municipal health officers are realizing more and more that one of their most important duties is to teach the public, and that instruction, if properly given, is much more effective than coercion without instruction. The majority of persons are not only willing but also anxious to do what is right if they know what they ought to do, and especially if they are shown why they ought to do it.

The first development of public health administration was in the direction of compulsory laws forbidding certain actions and requiring others. These, too often, while enacted from the best of motives, and based on sound scientific knowledge, either were in advance of public opinion or were passed without any effort to develop public sentiment to support them. While often effective in the hands of an energetic and capable health officer, they have been in many cases dead letters and in others enforceable only at the cost of an enormous amount of effort, which might better have been utilized in other directions. The leading state health organizations at present are endeavoring to increase the education and enlightenment of the public, and to create public sentiment for the enforcement of such health regulations as may be necessary.

One of the strongest exponents of this doctrine is the Indiana State Board of Health. Through its bulletin and through the newspapers of the state, most of which are hearty supporters of the board, an effective educational campaign has been carried on. Realizing that nothing so appeals to the average man and woman as do efforts to save the lives of babies and prevent needless illness among infants, the secretary of the board,

Dr. J. N. Hurty, asked the state legislature last year for an appropriation of $5,000 for the publication and distribution of "The Indiana Mothers' Baby Book." True to the instincts of the average legislator, the Indiana lawmakers cut this amount down one-half, and probably would have refused it altogether had not Dr. Hurty called attention to the fact that the same legislature had already appropriated a larger amount of money to stamp out hog cholera. Owing to the limited amount appropriated, the state board can send copies of this book only to the Indiana mother who has just borne her first child. Beginning last month, when the birth reports of the state for February were received by the secretary of the state board of health, the distribution of the book in this way was begun.

The book itself, which is attractively printed and bound, is intended to supplement and aid physicians by giving to mothers simple instructions concerning pregnancy, childbirth and the care of babies, in the hope that by this method a considerable amount of infantile disease and mortality may be prevented. The first part consists of chapters on parentage, pregnancy, preparation for labor and management of labor, and contains instructions for emergencies as well as advice for prospective mothers concerning their physical condition. The second part is devoted entirely to the care of the child, containing chapters on the care and feeding of the baby, advice to nursing mothers, bottle-feeding, clothing the baby, the second summer and teething. The book is thoroughly practical, written in simple language and well illustrated. The effect of this educational campaign will surely be apparent in a few years in the reduced infant death-rate in Indiana.

An additional touch is furnished by the two letters that accompany the book when it is sent to mothers. One is signed by the governor, congratulating the mother on the birth of her child; the other is from the state board of health offering its services in helping to keep the child well. Naturally, these letters greatly increase the mental impression on the parents, and lead to greater attention on their part to the instructions and admonitions in the little book.

THE HYGIENE OF ATHLETIC SPORTS—ROWING

In considering the discredit into which certain aspects of physical exercise are liable to be thrown by some of the abuses of modern athletics, we have pointed out the desirability and timeliness of ascertaining with some scientific precision and freedom from "professional" bias precisely what are the physiologic effects of the current practices.[1] The extent of the available information in respect to the specific influence of bodily exercise on the human mechanism is surprisingly limited. The time has arrived when criteria of competitive overdoing in contrast with wholesome athletic training should be proposed and discussed in a frank and fearless way for the future benefit of American youth.

Training has been defined as the systematic preparation of the body for the exhibition of the utmost efficiency of its muscular system by means of regular physical exercise and a carefully regulated mode of life. It aims at permitting the individual to undergo vigorous bodily exertion with relative ease in comparison with the untrained individual and, above all, without jeopardy to health. This involves numerous elements of change in the organism, the precise nature of which is all too little known and has received scant attention from worthy investigators in the past. A recent study carried out at Wurzburg on the members of one of the academic boat-clubs, under the supervision of the hygienist K. B. Lehmann, furnishes some facts of immediate interest in relation to the effect of the training of candidates for competitive rowing crews.[2] The facts were gathered by competent observers and bear on a number of physiologic functions. The period of training comprised in the case under discussion covered about two and a half months during the collegiate year. Almost every candidate manifested a decline in body-weight, the loss averaging about 4.5 kg. (9 pounds), a figure somewhat less than is currently expected to follow rigorous training like that called for by university crew practices. There is an early drop in weight, not improbably due to a loss of superfluous fat in the beginner. The organism then adjusts itself to the need of a more liberal energy intake resulting in more stationary weight. During the final periods in which the concluding races and strenuous competitive trials occur there is, as a rule, a further decline in weight. That the weight-curve is not without direct prognostic import is suggested by the Wurzburg observer. He has noted that if it shows a sudden and steep decline the condition known among athletes as overtraining is to be feared. This may follow overexertion. It is attended with uncertain efficiency and nervous symptoms that can be averted only by a carefully instituted rest, diversion, and conservation of the physical resources of the individual.

A surprising feature in Lehrbecher's measurements is the failure to demonstrate a considerable increase in the size of the muscles of various regions in the course of a two months' training. Familiar observation and the physiologic teaching of the present day lead one to expect pronounced development in the arm, for example, when this is subjected to vigorous exercise. Several factors may have entered into the absence of evidence of increased proportions in the musculature of these German oarsmen. Hypertrophy of the muscles may have been compensated for in the total volume of the limbs and other parts measured by the disappearance of surplus fat. Furthermore, it should be borne in mind that

1. Athletic Sports in Relation to Health, editorial, THE JOURNAL A. M. A., March 21, 1914, p. 936; Athletic Sports versus Competitive Athletics, ibid., April 4, 1914, p. 1094.

2. Lehrbecher, A.: Beobachtungen beim Rudertraining, Arch. f. Hyg., 1913, lxxxi, 1.

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rowing does not confine its demands to limited groups of muscles, which is the case in many other sports such as boxing or fencing, but calls into play almost every larger area of skeletal musculature. In skilful rowing the arms are drawn into participation far less than the inexpert layman is wont to believe; on the other hand, the abdominal muscles and the legs are called on to assume a not inconsiderable share of the special effort. The contours of the rectus abdominis as well as of the muscles of the back gradually come into striking relief. At the outset of training the volumes of the extremities may show considerable increase after each individual series of efforts; later these immediate changes due to circulatory responses become less marked or even negligible as the muscles are accustomed to the work which they perform. The physiology of this adaptation, often attended by a disappearance of muscular pains which accompany the beginner's efforts, awaits an explanation.

All students of the physiology of exercise are agreed that the acceleration of the pulse attending a definite exertion grows less and less with training. The difference between the well-trained and the beginner in this respect was strikingly brought out in the Wurzburg experiments. The demands made on the circulatory mechanism are indicated by the fact that in covering 2 kilometers in a four-oared racing-shell the pulse-rate was raised to from 150 to 180 beats per minute in every individual. It is precisely in this feature of the extreme task of the circulatory apparatus that the greatest dangers lie and that the least definite information as to the mechanism of compensation in relation to training is at present forthcoming. The respiratory distress so common with beginners after extreme effort is likewise greatly lessened as the result of training. The thorax seems to become more mobile to meet the needs of pulmonary ventilation, and the respiratory responses grow more efficient. The temporary rise in body temperature invariably attending muscular activity amounted, on the average, to 0.42 C. (0.75 F.) during a row over the usual course. This is somewhat less than one finds in other comparable athletic sports, doubtless owing to the fact that the mode of clothing in crew practice permits a more ready compensatory loss of heat from the body. Albuminuria and attendant pathologic kidney phenomena, so frequently mentioned as characteristic of undue physical exertion, were not observed in the present experiences.

The subtle influence on the nervous system of training for a decisive competitive event is recognized by those immediately concerned as an element liable to determine success or failure, but is rarely considered from the broader point of view of its effect on the welfare of the person concerned. Most candidates show more or less "nervousness" and increased irritability toward the end of a period of training, and this mental condition is well known to the experts. There may be periods of tendency to insomnia, and diarrheas of nervous origin have been observed. It has been counted as favorable in the case of college athletes that their scholastic duties act to divert attention in some measure from the "nerve-straining" features of athletic training. The same factor of distraction has been held to account for the often unexpected success of crews composed of business men who devote only their leisure moments to the somewhat monotonous rigor of training and practice.

The conclusions of a physiologic observer who has followed a season of training with unbiased expert eyes are worthy of close consideration. The possible dangers of competitive rowing are not concealed by him. Even with careful supervision, overexertion of the heart, nervous exhaustion and other untoward symptoms may arise. Such features can be averted by intelligent guidance; in other words, by training under the eye of a competent medical adviser rather than a muscular giant or an athletic trickster. Speaking from a personal experience, Lehrbecher frankly says that the choicest reward of the great effort of six weeks' preparation is not the absolute gain in muscular strength or bodily mastery, but rather a unique feeling of control over an organism that is equal to the greatest exertions. The feeling of having participated in a regatta is not greatly unlike the sense of satisfaction which attends the successful completion of an examination. The one demonstrates the mastery of the body, the other that of the mind. We are warned, however, of an additional duty rarely fulfilled by the present system of athletic competitions. It is the necessity of providing for some acceptable continuance of activity so that the derived gain of a season's training will not change to loss and the well-trained person revert to the other extreme of unhygienic living.

THE UNITED STATES PUBLIC HEALTH SERVICE

The annual report of the Surgeon-General of the United States Public Health Service for the fiscal year 1913 really is only a mere outline of the work of the department for the year, the full accounts of its wide and varied activities being contained in numerous bulletins and other publications issued from time to time. In the one hundred and fifteen years of its existence the service has rapidly grown, especially during recent years, both in the extent of scientific work and in the practical application of the knowledge so gained to the welfare of the people. It is doubtful whether the average citizen has any real conception of the extent or the great value of the achievements of the service.

It is worthy of note that not one case of cholera occurred in the whole of the Philippine Islands during the year, and only a few cases of plague, a disease which was never allowed to arise to the dignity of a menace. Yet these diseases have been from ancient times two of the scourges of the earth. Small-pox, which formerly killed 40,000 people annually in the islands, occurred in

such a small number of cases (and those among persons inaccessible to vaccination) that it is an item of only minor importance in the report for 1913. Yellow fever since its banishment following the Spanish War, through constant watchfulness, has never again gained a foothold anywhere in our possessions, and is only mentioned in connection with the strict quarantine maintained against Central and South American countries where the disease is always present.

Concerning the United States proper, highly interesting and significant of the practical activities of the service are the reports of the field investigations on pellagra, trachoma, malaria, Rocky Mountain spotted fever, typhoid fever, tuberculosis, parasitic diseases, pollution of navigable waters, sanitary administration, school sanitation and the hygiene of occupations. Much of this work was done at the request of and in cooperation with state health boards. The work also included laboratory investigations of many of the diseases primarily named as well as others, studies in connection with the supervision of viruses and vaccines, serums and toxins, the preparation and distribution of antirabic virus, the enforcement of the white-phosphorus-match law, etc. As a result of the investigations since 1906 by the service and by others, sufficient knowledge of typhoid fever is said to exist which, if utilized, would abolish the disease. It continues to prevail, however, and the department in future will endeavor, by studying local outbreaks, to stimulate interest in the adoption of measures for prevention, not the least of which is antityphoid inoculation. A great portion of the activities and of the forces of the Public Health Service are connected with the quarantine and immigration services, and the account of that work given in the report is of decided interest and importance. We have commented a number of times during the past year on the work of the immigration service, especially in connection with the admission or exclusion of the feeble-minded and the insane. This report as a whole shows that an amazing amount of work of the most practical value has been accomplished by this service. For a body inadequately manned, and provided with insufficient appropriations to carry out a tithe of its possibilities of benefit, the United States Public Health Service has demonstrated anew its whole-hearted interest in humanity and its great power for good.

THE SERUM TREATMENT OF TETANUS

The great value of antitetanus serum as a preventive is unquestioned. Indeed, Kocher says that failure to inject antitetanus serum as early as possible in all cases of wounds contaminated with street dirt would be culpable neglect. As a specific cure, however, this serum has fallen far short of the earliest expectations; it even has been asserted that so far the statistics and the evidence obtained from watching patients treated with serum do not indicate that it has any real curative value. It has been shown experimentally, however, that antitetanus serum may save animals already suffering from the symptoms of an otherwise fatal intoxication, but in order to accomplish this result the serum must be given in several hundred times the quantity required merely to protect, and it must be injected within a short time, from twenty-four to thirty-six hours, after the onset of the tetanus. Furthermore, it cannot be denied that the weight of statistics favors the serum. It is generally stated and accepted that the death-rate of tetanus before serum treatment was introduced was from 80 to 85 per cent. We now have several series of cases under serum treatment which all give a somewhat lower death-rate — from 60 to 65 per cent. — whereas in cases without serum treatment the higher rate of earlier days appears to prevail.

Permin,[1] in a recent and thorough review, reaches the general conclusion that antitetanus serum has reduced the mortality of tetanus approximately 20 per cent. He gives figures from Denmark, which are especially valuable because gathered from a small area, and hence representing fairly uniform conditions: 199 cases not treated with serum gave a death-rate of about 80 per cent., while 189 cases in which the serum was used gave a rate of 58 per cent. It is significant that the Danish figures correspond closely to American statistics and those of other countries. In view of this evidence in favor of the serum in tetanus it is self-evident that the physician is under obligation to give every patient with tetanus the opportunity to obtain any benefit there may be in the serum.

At this point the question may be raised: What is the reason that the antitetanus serum is not more effective than it has been? An attempt to answer this question requires a brief word concerning the genesis of tetanus. The symptoms of tetanus are caused by a toxin which is said to be the most virulent of all poisons. This toxin is produced by the bacilli lodged in the wound and it reaches the brain and cord by way both of the circulation and of the muscular nerves, along which it travels with considerable rapidity; it has a special affinity for the ganglion cells of the brain and cord, and its action on them causes the stiffness and spasms characteristic of the disease. It has been determined by experiment that tetanus antitoxin, no matter how introduced into the body, probably has practically no effect on the toxin which already has entered the ganglion cells; antitoxin does neutralize, however, the toxin which is free in the blood and lymph, and it does this most quickly and effectively when the antitoxic serum is introduced intravenously or intramuscularly. According to the experiments of Permin, it seems that the antitoxin so introduced does not reach, and hence does not neutralize that toxin which is still in the nerves. Permin was able to

1. Permin: Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1913, xxvii, 1; abstr., THE JOURNAL A. M. A., Jan. 10, 1914, p. 170.

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produce tetanus experimentally by injecting toxin directly into suitable nerves, even though the animal was thoroughly immunized beforehand by the injection of antitoxic serum. That is, a muscular nerve, even though bathed in lymph containing tetanus antitoxin, will nevertheless convey fatal quantities of tetanus toxin to the nerve-centers. The only way in which the antitoxic serum can neutralize this intravenous toxin is through intraspinal injection. By this method the antitoxin reaches not only the toxin still in the nerves, but also that which has passed into the blood and lymph. From this we learn, then, two very important facts, namely, first, that the serum does not affect the morbid process initiated by the entrance of the toxin into nerve-cells, as its preventive action lies in neutralizing the toxin which is still free; and, second, that only by intraspinal injection can it reach the toxin traveling in the nerves. Hence, the reason for the ineffectiveness of the serum treatment of tetanus must be failure to begin the treatment, which is essentially preventive, early enough; the use of too small a number of antitoxic units, and the selection of a place of injection not best suited to secure the maximum neutralizing action.

The recognition of the natural limitations of the serum treatment of tetanus will serve to emphasize the importance of early and liberal use of antitoxic serum largely by intraspinal introduction in order to neutralize the toxin that still is free and on its way to the nerve-cells, the necessity of thorough cleansing of the wound to remove all source of continued intoxication, and of conserving the strength of the patient in the hope that the morbid process caused by the toxin already in the nerve-cells may be overcome.

SALVARSAN THERAPY

By a careful review of the fatalities from salvarsan not only under his immediate observation, but also of the cases in the literature, Wechselmann,[1] in a pamphlet issued recently, attempts to prove that the cases of encephalitis hemorrhagica following salvarsan treatment were due to uremia. This was the result of the irritation of kidneys which in most cases had been rendered insufficient by mercury. The kidney lesions, while not so severe as to give clinical or laboratory evidences of trouble, yet reacted to salvarsan by a fatal suppression of urine. He supports this argument by the findings in a series of animal experiments showing that mercury, like chromium, damages the tubular epithelium of the kidney, while arsenic, like cantharidin, acts on the glomeruli. He explains that kidneys long irritated by mercury are so injured that the comparatively slight irritation of salvarsan can cause suppression.

On the basis of this theory, which he grants is not proved, he argues in favor of a pure salvarsan therapy in place of the generally accepted combined mercury and salvarsan therapy. His opinions can scarcely succeed in making many converts to pure salvarsan therapy; but they are valuable, especially as coming from a salvarsan enthusiast, because of the emphatic warning that no pains should be spared in the detection of contra-indications, and in the accurate determination of the proper dose if no contra-indications exist.

Whether or not the insufficiency of the kidneys is the key to the situation, the suggestion that careful examination of their efficiency be made in every case before giving salvarsan is a good one, and too much emphasis cannot be laid on the admonition to regulate the size of the dose according to the individual. Only by such care can deaths from salvarsan be avoided. Wechselmann's caution against giving salvarsan immediately after intensive mercury therapy can at least warn us against overenthusiasm in both lines.

His special pleading on behalf of salvarsan is well illustrated in the following passage (p. 59): "According to all these findings we are justified in saying that salvarsan of itself is not poisonous to normal human beings in the usual dose. A failure of some organ, especially the kidneys, is always responsible. For this insufficiency mercury is often to blame, only perhaps exceptionally salvarsan or such other factors as the effect of syphilis or other infections on the blood-vessels."

His conclusions (after a review of 140 cases in the literature) are also worth quoting: "One sees that here is a many-colored mixture of fatal cases of no single type, for only the smallest percentage of which can salvarsan be blamed. The very variety of the pathologic conditions under which encephalitis hemorrhagica appears shows that salvarsan, at least for the great proportion of these cases, is only a determining factor, not the real cause of death. Therefore no explanation applying to all cases can be made. . . . A glance at the case histories shows how blindly salvarsan was at first used and that certainly most of the deaths could have been avoided. . . . We are well aware that our exhibit is very incomplete, and that we have often arrived at conclusions through analogy and deduction. But because of the great practical value of a review of the salvarsan deaths I hold it my duty, in spite of the incompleteness of my data, to present further precautions in the use of salvarsan. . . . Only after these precautions are observed can the real investigation of apparently so simple but really so complex a question as that of deaths from salvarsan be instituted."

No one can dispute the statement that many of the deaths from salvarsan have been caused by its ill-considered use either in the face of contra-indications or in too large or too frequent dosage; but to argue from this that the fatalities are therefore not due to salvarsan and that salvarsan is not toxic is far from logical. The unwise use of salvarsan may be expected as a result of

1. Wechselmann, Wilhelm: Ueber die Pathogenese der Salvarsantodesfälle, Urban and Schwarzenberg, Berlin.

such arguments, and the stubborn denial of the toxicity of the drug has encouraged its careless administration. The arguments advanced by Wechselmann will be to the thoughtful reader a warning against the indiscriminate use of a remedy that has proved itself dangerous if handled without due caution.

Current Comment

AN EASY TEST FOR SUSCEPTIBILITY TO DIPHTHERIA

In many persons the blood normally contains diphtheria antitoxins in readily demonstrable quantities. This is the case in about 80 per cent. of the new-born, 90 per cent. of adults and from 50 to 60 per cent. of children. There are good reasons for believing that such persons are insusceptible to diphtheria, and if this is true, then the prophylactic injection of diphtheria antitoxin might be omitted in many cases, provided it were possible to detect promptly the persons supplied by Nature with antitoxin. A practicable method for this purpose appears to be available in the intracutaneous injections of minimal quantities of diphtheria toxin. Such injections are followed in a few hours by a definite reaction of local redness and infiltration in persons devoid of antitoxin, while persons having natural antitoxin in the blood as a rule give no reaction at all of this kind. That the reaction is really significant is indicated by the fact that children sick with diphtheria give the reaction when tested before having received antitoxic serum; on the other hand, the new-born, who as a rule do not contract diphtheria, give the reaction only in exceptional cases. Schick,[1] who has been working on this reaction in von Pirquet's clinic in Vienna, observed that among the nurses those giving the reaction are likely to become sick with diphtheria. Systematic observations by several workers indicate that according to the results of the intracutaneous injection of diphtheria toxin 93 per cent. of the new-born are protected, 57 per cent. of children in the first year, 37 per cent. of children between 2 and 5 years of age, and 50 per cent. of children between 5 and 15. These figures indicate that at all ages a large proportion of children really may not need to receive preventive injections of antidiphtheria serum. Presumably, adults are protected in still larger proportions. The test is very simple: the quantity of toxin injected is one-fiftieth of the minimum lethal dose for the guinea-pig, and this is diluted so as to represent 0.1 c.c. of fluid. The results are available at the end of twenty-four hours. This test seems to be easily adaptable to institutions of various kinds; when diphtheria breaks out, all the inmates can be tested and only those who show inflammatory reaction injected. In this way much annoyance on account of serum reactions as well as much expense may be avoided. The results of further observations will be awaited with interest.

1. Schick: München. med. Wchnschr., 1913, lx, 2608. This article gives the references.

ALCOHOL BARRED FROM THE NAVY

Alcohol as a beverage has been barred out of the United States Navy. Following the recommendation of Surgeon-General Braisted, Secretary of the Navy Josephus Daniels has issued an executive order abolishing all alcoholic liquors from every ship and station of the Navy. The order reads, "The use or introduction, for drinking purposes, of alcoholic liquors on board any naval vessels, or within any naval yard or station, is strictly prohibited, and commanding officers will be held directly responsible for the enforcement of this order." The significance and extent of the change which has taken place in popular views regarding alcohol, as indicated by this sweeping order of the secretary, can be appreciated only when one recalls the stories of naval experiences of past generations, when rum, brandy and whisky formed a part of the regular official rations, when liquor of some kind was served, as a routine procedure, to officers and men before going into action, and when one of the chief characteristics of sailors, whether officers or seamen, was their ability to dispose of an amazing quantity of intoxicants. The development of scientific methods and the use of instruments of precision in warfare have made alcohol absolutely detrimental to the modern naval man. Sea-fights in the past were won by brute hardihood and physical endurance which could perhaps be stimulated, temporarily at least, by large doses of alcohol. The modern war-ship is a floating laboratory of delicate and accurate machines. The gun-pointer who directs a 14-inch rifle on the modern man-of-war needs not only personal courage, but also absolute steadiness of nerve, clearness of vision and fine muscular coordination. All these things modern physiology has shown to be impaired by even small amounts of alcohol. The engineer who superintends the machinery at the heart of the modern battleship, the man at the wheel who directs its course and the captain or the executive officer on the bridge, as well as the most humble member of the crew, need at all times to be in a condition of maximum physical and mental efficiency. Intoxication in the naval officer to-day might easily be as disastrous as cowardice and treason. Surgeon-General Braisted's recommendations and Secretary Daniels' order are simply in line with our growing knowledge. The nation needs on its battleships to-day the most capable, clear-headed, cool-brained and steady-handed men, and these men are not found among the habitual or occasional users of alcohol in any form. Entirely aside from moral or sentimental reasons, and considered simply as a scientific regulation in the interest of efficiency, this order will recommend itself to the vast majority of the American people.

THE FORMATION OF FAT FROM PROTEIN

The time has passed when an undue accumulation of fat in various organs and tissues can be labeled "fatty degeneration" without further concern as to the conditions causing the accumulation. The demonstration of the wide-spread occurrence of a true "fatty infiltration" has broadened the views concerning the phenomena of fatty metamorphosis. In accordance with the theory

of Virchow, to whom we owe the early classic investigations on the histology and pathology of these changes, they were long considered to be due to a direct transformation of cell proteins into fat — a true fatty degeneration of protoplasm. This in turn became one of the strong arguments in favor of the theory of the direct formation of fat from protein. Many additional evidences to support the theory were brought from other fields of study, among them the supposed increase in fat in the ripening of protein-rich cheese. This "proof," like many others used to maintain this much-debated point, must also be finally discarded. Kondo[1] has demonstrated by painstaking analyses that under no circumstances does an increase occur in the fat content of ripening cheese. When the process goes on in the presence of fungi exposed to the air, there usually is an actual disappearance rather than a new formation of fat; and even in an atmosphere deprived of oxygen, the quantity of fat at best remains unchanged.

PUBLIC EDUCATION THROUGH LOCAL NEWSPAPERS

A striking illustration of the way in which our local medical organizations can instruct the public on health topics is found in the special Y. W. C. A. edition of the Knoxville (Tenn.) *Sentinel*, issued by the women of Knoxville. This edition contains a large number of special articles on many topics of local and general interest, an entire page being given to public health. A large share of this page is occupied by an article on "Organized Medicine, What it Stands for, and Some of the Things it has Accomplished," which presents the entire argument for medical organization as a benefit to the public. The objects and advantages of organization, for both local and national associations, are presented clearly and forcibly. Other articles on the page are, "Immunity First Aid to Preventive Medicine";"Advantages Claimed for General Hospital Plan"; "Garbage Disposal," and "Vivisection." A reprint of Rudyard Kipling's article on "The Doctor and the Patient" from the *Ladies' Home Journal* completes the page. This example is a good one for other county societies to follow. In counties in which the medical profession is properly and effectively organized, a request from the society as a body, for an insertion in the leading papers of the county of suitable educational articles on public health topics, will be disregarded by very few local newspapers. Articles prepared under the supervision of the county society and published with its approval will carry an amount of authority and influence that would not be possible in the case of articles prepared and signed by individual physicians. With the advance in preventive medicine and the increase in knowledge of the methods of transmission of contagious diseases, the doctor is reverting more and more to his original rôle of teacher, and the sooner physicians as a class qualify themselves for this educational function, the sooner will they have the overwhelming support of intelligent people.

1. Kondo, K.: Ein experimenteller Beitrag zur Frage der Fettbildung aus Eiweiss bei der Reifung des Käses, Biochem. Ztschr., 1914, lix, 113.

HOLMES, NOT SEMMELWEIS

We recently received a reprint of the memorial address delivered at the annual banquet in honor of Semmelweis by Julius Dollinger,[1] professor of surgery at Budapest. It is a commendable custom thus to keep alive the memory of a physician who has helped by a great discovery to preserve the lives of countless women in the performance of their highest service to the world. Although no history of Semmelweis' work was given, Dollinger assumes that Semmelweis was the originator of the theory of the contagiousness of puerperal fever. He is probably unaware that before Semmelweis announced his views the leading English authorities regarded puerperal fever as a specific contagious disease, and that, in America, Oliver Wendell Holmes in a masterly essay had presented the true situation and had aroused the members of the American profession to appreciate their responsibility for the spread of this dread disease. The clinical proof offered by Semmelweis enabled him, in the face of much opposition from obstetricians of Continental Europe, to establish the contagiousness of puerperal fever. He well deserves the honor which he has received, but his countrymen ought to remember that the glory of this great achievement is not for Hungary alone. A wider acquaintance with literature would obviate such mistakes. We may repeat the question which we asked some years ago.[2] Why should not America honor Holmes as Hungary has honored and still honors Semmelweis? Why should not we, like the Hungarians, by an annual dinner or address, recall the work of Holmes and incidentally testify to the value of early American medical work and literature?

CHIROPRACTIC

Chiropractic is a freak offshoot from osteopathy. Its followers assert that disease is caused by pressure on the spinal nerves and can be eradicated by "adjusting" the vertebrae. It is the sheerest kind of quackery, practiced largely by men whose general education is as limited as their knowledge of anatomy, and who are profoundly ignorant of the fundamental sciences on which the treatment of disease in the human body depends. Chiropractic is taught — heaven save the mark! — on the mail-order plan. The modern medical school requires that its matriculants have a fairly good general education. The so-called "colleges" of chiropractic matriculate anybody who can pay the fee. The medical school requires, in addition to a good preliminary educational foundation, four years — in some cases five — of hard study with much practical work before granting the degree of doctor of medicine. The chiropractic "schools" profess to teach individuals how to treat disease by a few weeks' mail-order instruction. Study the advertisements of any concern that professes to give a "course" in chiropractic. Send for the advertising matter and obtain the follow-up letters by which these alleged schools obtain "students." The key-note of every piece of advertising matter that emanates from

1. Dollinger, Julius: Semmelweis-Denkrede, Pester Medizinische-Chirurgische Presse, 1914, L, No. 6.
2. Puerperal Fever and the Monument to Semmelweis, editorial, THE JOURNAL A. M. A., Dec. 8, 1906, p. 1920.

these sources is that there is "big money" in chiropractic. Chiropractic is in no sense a profession. It is a scheme by which sharpers induce men, generally of little education and with a dwarfed sense of moral obligation, to learn the tricks of a disreputable trade — quackery.

Medical News

ARIZONA

Personal.—Dr. Thomas Watkins, after five years connection with the medical department of the Copper Queen Company at Bisbee, has resigned and returned to his former home, Richmond, Va.

Arizona Anti-Tuberculosis Society.—The Arizona Anti-Tuberculosis Society, of which Dr. John W. Flinn of Prescott is president, will meet in Tucson the day following the session of the state society.

Meeting of State Medical Society.—The State Medical Society will meet at Tucson, April 20, 21 and 22. Arrangements are in charge of the local committee of which Dr. Meade Clyne is chairman.

CALIFORNIA

Personal.—Dr. Percy T. Phillips, Santa Cruz, fractured two ribs in an automobile accident near Calistoga, March 29.——Dr. William E. MacCoy, Los Angeles, was awarded $1,000 in his suit for payment for medical services against H. R. Gage, March 23.

Summer School of Medicine.—Stanford University Medical School, San Francisco, announces that it will offer a summer course for physicians from July 6 to August 16. Special work will also be given in the laboratories of the medical school, in the Lane Hospital, the San Francisco City and County Hospital and the Isolation Hospital.

New Officers.—Southern California Alumni Association of the College of Physicians and Surgeons, Chicago, at Los Angeles, March 24: president, Dr. Charles H. Whitman; secretary, Dr. Walter F. Wessels, both of Los Angeles.——Lassen-Plumas Counties Medical Association at Susanville: president, Dr. William E. Dozier; secretary-treasurer, Dr. Robert W. T. Garner, both of Susanville.

ILLINOIS

Chicago

Personal.—Dr. Arthur R. Elliott, who was operated on for appendicitis at St. Luke's Hospital, April 3, is making satisfactory progress toward recovery.

Banquet of County Hospital Physicians.—The annual banquet of the Cook County Hospital physicians was held in the new Fort Dearborn Hotel, April 2. One hundred and four physicians and guests were present. Dr. Frederick G. Dyas acted as toastmaster.

Baby Week.—The Chicago Infant Welfare Society has announced April 19 as the beginning of "Baby Week," during which a vigorous campaign will be conducted to interest every one in the subject of infant welfare in Chicago. Out of this work it is hoped that a permanent campaign may be vitalized. The churches, newspapers, moving picture theaters, posters, theater programs and many other agencies will be employed in arousing interest in the campaign. The society maintains stations with trained nurses in charge where mothers may go for advice and help, and nurses are sent to the homes. In 1913 the society spent between $25,000 and $30,000 in maintaining thirteen infant welfare stations; 1,212 conferences were held, 3,678 babies were cared for and 41,647 calls were made by the thirteen nurses. The physicians connected with the work of the society donated their services. The general infant mortality of Chicago is 19.6 per cent., whereas in the area in which the society carried on its welfare work the death-rate was 3.8 per cent. It is hoped that fifty stations may be maintained during the present year.

INDIANA

Small-Pox.—The small-pox epidemic in Indianapolis is on the decrease; 458 cases were reported during the month of February without a single death.

Hospital at Bloomington.—A new hospital for Bloomington, Ind., is one of the promises of the near future; $40,000 is being raised by local federations of clubs for that purpose.

Tuberculosis Dispensary.—The opening of the dispensary of the Fort Wayne Anti-Tuberculosis League at 39 Schmidt Block occurred March 16. Drs. Eric A. Crull, Edmund M. Van Buskirk and Charles G. Beall are on the staff of physicians. The dispensary is in charge of Miss Irene Byron, visiting nurse.

Tuberculosis Camp and Hospital.—A farm of eleven acres has been offered to the city of Indianapolis for the establishment of a temporary tuberculosis camp. The county commissioners of Marion County have decided that a hospital for tuberculosis patients will be erected in the near future as it has been shown that there were 2,715 deaths from tuberculosis in Marion County during the past five years.

Personal.—Dr. John Eberhart and son Clyde of Lewis Creek were badly burned by a gasoline explosion.——Dr. George W. Bowman and Dr. Walter Tinsley have been appointed district physicians at the city dispensary, Indianapolis.——Dr. William F. Walsh, Indianapolis, was seriously injured by being struck by a Cincinnati, Hamilton and Dayton Railroad train, March 21.——Dr. Luke H. Kelly, Hammond, was injured in an automobile accident, March 26. He was removed to St. Mary's Hospital, where it was found that several ribs were fractured, and that he was severely bruised.

Visiting Nurses in the Public Schools.—The City Board of Health, Indianapolis, has decided to inaugurate a system of visiting nurses in the public schools. As $10,800 is raised annually on a one-half cent tax levy for school inspection which is provided for by the state law, part of this will be devoted toward employing nurses. It is expected by next fall sufficient funds will be available to provide for an assistant superintendent of nurses at the city hospital, who will have charge of all nurses. At first pupil-nurses from the city hospital will be employed, who will devote part of their time to the work; later regular nurses will devote all their time to it.

LOUISIANA

Personal.—Dr. Thomas B. Pugh, Napoleonsville, has been named as mayor of that city.——Dr. Sidney D. Porter has been named as chairman of the coming conference on hookworm, which is soon to be held in New Orleans.

Meeting of State Medical Society.—The Louisiana State Medical Society will meet at New Orleans, April 21. The meeting of the society will be preceded, April 19 and 20, by the conference of State Health Officers. Special rates have been arranged with the hotels.

New Parish Societies.—The Webster Parish Medical Society was organized at Cotton Valley, March 9. Dr. Fred J. Mayer, Opelousas, addressed the meeting on small-pox and typhoid vaccination.——The Medical Society of St. Martin's Parish was organized with the assistance of Dr. Fred J. Mayer, president of the State Medical Society, March 23. The following officers were elected: president, Dr. A. P. Sillan; secretary-treasurer, Dr. E. Fred Stockton, both of St. Martinville.——Lafayette Parish Medical Society at Lafayette: president, Dr. John L. Chiasson, Scott; secretary-treasurer, Dr. Merrick E. Saucier, Lafayette.

Improvements at Leper Station.—At the meeting of the board of control of the Louisiana Leper Home, White Castle, preliminary plans were presented for improvements for the home. Plans for additional cottages are included and for a large central building which will operate the sewage disposal plant, hot and cold water-supply, electric light and fuel-producing systems and refrigerating plant. The home now cares for eighty-seven patients, but additional rooms are necessary. It is estimated that only one-third of the lepers of the state are inmates of the institution. The legislature will be asked for a larger appropriation to cover the improvements.

Medals for Distinguished Services.—Drs. Charles C. Bass, Charles W. Duval and Abraham L. Metz were presented with medals of honor, March 14, by the resident members of the National Institute of Social Sciences, New Orleans. The presentation took place in the council chamber of the City Hall, and was in honor of the distinguished services performed by the physicians in scientific research. The distinguished services mentioned in the case of Dr. Bass were his cultivation of malarial plasmodia, a test for typhoid fever, and his contributions to the study of hookworm and pellagra. In the case of Dr. Duval, for his discovery of the cause of epidemics of dysentery, in collaboration with Dr. Charles E. Verdier, his contributions to the study of tuberculosis, arteriosclerosis,

pneumonia and the treatment of leprosy. Dr. Metz was honored for his sanitary work in connection with yellow fever in 1897 and 1905, and for his crusade against insanitary dairies and adulteration of milk, and for much other sanitary work of peculiar excellence.

MARYLAND

Baltimore

Bond Issue for Sydenham Hospital.—The bill, authorizing a bond issue for $750,000 to provide an adequate hospital for infectious diseases for Baltimore city, has been passed by the general assembly.

Home for Widows and Orphans of Physicians Aided.—The Dawkins bill, appropriating $3,000 annually for the next two years for the support of the Home for Widows and Orphans of Physicians of Baltimore, was passed by the general assembly and signed by the governor.

To Aid Mercy Hospital.—To arouse interest in Mercy Hospital and to give their business judgment for the extension of the institution, more than a score of business and professional men held a meeting in the board rooms of the Fidelity Trust Company on April 3 and partially perfected an organization. Cardinal Gibbons was elected honorary general chairman.

Small-Pox in Johns Hopkins Medical School.—Chester A. Downes, a member of the graduating class of Johns Hopkins Medical School, was taken to the Quarantine Hospital last week after an examination had disclosed that he was suffering from small-pox. At the Johns Hopkins Hospital it was stated that great precautions are being taken to prevent an outbreak of the disease among the students and the faculty, all of whom will be required to undergo vaccination.

Personal.—Dr. William J. Coleman, Baltimore, superintendent of University Hospital, has been confined to his bed with an attack of grip. It is thought that he will be able to resume his duties within a few days.——Dr. Horace M. Simmons, formerly editor of the Maryland Medical Journal, is traveling in the Hawaiian Islands.——Dr. A. Trego Shertzer has been seriously ill at his home for the past ten days.

Hopkins Man to Plan Big Hospital.—The directors of the University of California, after looking over the relative attainments of many hospital organization specialists throughout the country, have selected Dr. Winford H. Smith, superintendent of the Johns Hopkins Hospital, to act as consultant of building, organization and administration plans of the new $1,000,000 hospital to be erected in San Francisco in connection with the University. Dr. Smith has left for the Western city and will be gone about eight weeks. During the last three years Dr. Smith has helped to plan the Phipps Psychiatric Clinic, the Harriet Lane Children's Hospital, the Brady Urological Clinic, and the Marburg Ward, the four big departments of Johns Hopkins Hospital.

Crusade for Clean City.—The Health Department, in cooperation with the Police Board, as a result of a conference at the City Club, has started a clean city crusade that promises permanent results. The plan will be worked out by means of a corps of sanitary policemen to be detailed by the Police Board and known officially as the "Sanitary Squad." Every patrolman is to be made responsible for the cleanliness of his beat, both as to alleys and private premises. Patrolmen are to be instructed and their work supervised by eight sanitary officers, one for each police district. The commissioner of street cleaning will cooperate to the extent of removing all refuse he is required by law to haul away. The assistance of the Women's Civic League has also been assured. It will be the duty of the "Sanitary Squad" to inspect all alleys in the districts to which they are assigned and see that garbage is not left lying where it will attract mosquitoes and vermin, as well as rodents. It will be their duty to educate the public in taking proper precautions against any negligence which might result in the spread of disease.

MONTANA

Spotted Fever.—Two cases of Rocky Mountain spotted fever have been reported from Hamilton and Stevensville, in the Bitter Root Valley. Surgeon L. D. Fricks of the United States Public Health Service has again taken up the study of the tick fever in the valley.

NEBRASKA

Meets in New Quarters.—The Douglas County Medical Society met, March 3, in its new quarters in the Omaha City National Bank Building. The address was by Dr. Fred C. Zapffe of Chicago, on "Bone Tumors," and was illustrated by lantern slides.

Meeting of State and Local Health Officers.—The second annual conference of the state and local health officers was held in Lincoln, March 11. Nearly two hundred health officers were in attendance. The conference was in session two days at the Lincoln Hotel.

Society Meeting and Banquet.—The Fillmore County Medical Society met March 10 at the Hotel Jamieson in Geneva. They had as guests members of the dental profession residing in Fillmore or surrounding counties. After the business meeting, a banquet was held in honor of Dr. Royal Woods, a practitioner of twenty-five years' standing in Geneva who has recently removed to Heigler.

New Fraternity House for Physicians.—On March 9, ground was broken for the new fraternity house of the Iota chapter of the Phi Rho Sigma fraternity. The occasion was the thirteenth anniversary of the founding of the chapter at Omaha. The program was in charge of Drs. M. F. Tinly, Burton W. Christie and others. The fraternity house is to be at Forty-Second and Dewey Avenues and will cost $15,000. It will be a three-story structure with basement, and fitted with club and living rooms.

Decision Validating Sanitary District.—The Supreme Court of Nebraska, March 13, affirmed the decree of the Lancaster County District Court, validating the laws creating Lancaster County a sanitary district. This district had been in existence for twenty years and much work had been done in the way of public sanitation and upwards of $200,000 had been spent. The injunction was asked in 1911 by C. O. Wheedon, to enjoin the sanitary district from performing its functions on the grounds of unconstitutionality.

Personal.—Dr. Albert P. Fitzsimmons, Tecumseh, has received notice of his appointment as a member of the municipal commission of the Philippine Islands.——Dr. Clinton K. Timmons, Columbus, has received his appointment as surgeon of the Illinois Central Railway, with headquarters in Chicago.——Dr. Oscar S. Hoffman, Omaha, after an accident in which his shoulder was dislocated, made two calls on his patients before having the dislocation reduced.——Dr. W. Howard Heine, Hooper, had his collar-bone broken in an automobile accident.

NEW YORK

New Officers.—Utica Medical Club, March 19: president, Dr. Frederick R. Ford; secretary-treasurer, Dr. Raymond L. Baker.

Berlin Professor to Lecture in Buffalo.—Prof. Ludwig Pick, Berlin, will deliver the Herrington lecture to the Medical Department of the University of Buffalo. His topic will be "Some Advances in Pathologic Anatomy."

Personal.—Dr. Harriet M. Doane has been appointed health commissioner of Fulton.——Dr. J. W. Cox, pathologist to the Crouse-Irving Hospital, Syracuse, has resigned on account of ill health.——Dr. Erastus Corning, Albany, has been appointed a trustee of the State Hospital for Incipient Pulmonary Tuberculosis.

Tuberculosis Among Cows.—The New York Milk Committee has just sent to Governor Glynn the statement that 500,000 of the 1,500,000 dairy cows in this state are tuberculous and that 40 per cent. of these are spreaders of the disease. The suggestion is made that the Webb bill, providing for a compulsory examination of all dairy cattle and the destruction of all showing physical signs of disease would only slightly retard the spread of the disease. It was urged that such physical examination of dairy cows was irregular and uncertain and would only detect a small percentage of the cows affected. It was stated that the only reliable method of detecting bovine tuberculosis was by the tuberculin test. It is asserted that 90 per cent. of the residents outside the city of New York consume raw milk and are therefore exposed to infection.

Wood-Alcohol Legislation.—A joint hearing was held on March 18 on the Griffin-Thorn bill which prohibits the manufacture and sale of wood alcohol combinations without the poison label. The bill was drafted by the New York Committee for the Prevention of Blindness and has the support of a number of influential organizations. It prohibits the manufacture or sale of any article of food or drink containing methyl alcohol or of any preparation or mixture containing methyl alcohol intended for internal use by man. It provides also that no person or corporation shall sell or offer for sale methyl alcohol in any form, or any preparation containing methyl alcohol, under any name or trade mark, unless there be affixed to the bottle or vessel containing the same

a conspicuous label bearing the words "Poison, Likely to Cause Blindness or Death." Violation of the provisions of this bill is made a misdemeanor.

New York City

For Maternity Hospital.—A seven days' carnival was opened March 28 for the benefit of the Bronx Maternity Hospital which is to be erected at Hunt's point. There is a baby show in connection with the carnival in which more than 1,500 babies have been entered.

Physical Examination for City Workers.—Employees of the New York City Health Department, 3,000 in number, are to be physically examined, that the department may have a record of the physical status of its employees. This step is in accordance with the plans of the Life Extension Institute.

Babies' Dairy Exhibit.—The Babies' Dairy in West Forty-First Street recently gave an invitation exhibit of its method used in preparing milk for sick babies less than a year old. The milk is supplied in single-feeding bottles in refrigerator boxes containing a day's supply. The babies are examined by physicians and the proper amount of milk prescribed and then put up by experts. There are now three such dairies in different parts of the city.

Large Gift for Animal Study.—It is announced that John D. Rockefeller has given an additional $1,000,000 to the general endowment fund of the Rockefeller Institute for Medical Research for the purpose of organizing a department for the study of diseases of animals. It was also announced that James J. Hill had pledged $50,000 to aid in the study of hog cholera. Hitherto the Institute has confined itself to investigations in the fundamental problems of biologic science and to investigations in the field of human diseases. One of the features of the work of the new department, it is said, will be the study of cattle tuberculosis.

Urges Vaccination on All.—Health Commissioner Sigismund S. Goldwater is having printed for immediate distribution throughout the city 800,000 circulars warning those in need of vaccination not to delay in taking this precaution, owing to the prevalence of small-pox in the northern part of this state and in Pennsylvania, Ohio and South Carolina. There has not been a general vaccination of those living in New York for twelve years and it is estimated that a general vaccination would cost $150,000. Dr. Goldwater states that the school children are all protected but that vaccination is neglected among very young children and adults.

New Procedure in Typhoid Fever.—On March 2, two important changes in the method of sanitary supervision of typhoid fever went into effect. The first was the adoption of the district unit system of direct assignment and report. That is, each inspector calls daily at the branch office, receives his new assignments and reports for those of the previous day. The second change is the prompt investigation at milk stores, by policemen of the sanitary squad, of the source of supply of the milk used in families of persons suffering from typhoid fever. This is another step along the line of employing policemen for police duty in health matters. Motorcycle policemen also deliver diphtheria antitoxin to the homes of patients in the different boroughs. This has proved highly satisfactory and it is believed that similar results may be expected in the milk work.

Personal.—Dr. Max Terbst has been elected a member of the board of managers of the Mohansic State Hospital.——A farewell dinner will be given to Dr. Elise S. L'Esperance, winner of the Mary Putnam Jacobi fellowship, at the residence of Dr. Emily Dunning Barringer, April 14. Dr. Alice Rohde, Pittsburgh, Pa., first winner of the fellowship, will also be a guest of honor on this occasion. Dr. L'Esperance sails for Europe this month to continue her research work on cancer.——Captain Arthur N. Tasker, M. C., U. S. A., has been appointed professor of tropical medicine at the Long Island College Hospital.——Dr. J. J. Flynn, resident physician of St. Mary's Hospital, Brooklyn, was painfully injured in a collision between his automobile and a trolley-car, March 28.——Dr. Haven Emerson has been appointed sanitary superintendent of New York City, vice Dr. Walter Bensel, retired.

Encouraging Vaccination.—On account of a number of instances of small-pox arising from infected persons coming in from outside of the city, and the constant danger to which persons visiting the large stores, hotels, theaters, etc., are subject from such sources, more complete vaccination is urged by the Department of Health. A recent canvass by the department shows that while a large proportion of the population has been vaccinated, in many instances it has been so long ago that the protection has probably been lost, and revaccination of every one is urged. In order to facilitate this the department offers to furnish the vaccine and even to vaccinate every one who applies. The proprietors and managers of large establishments, stores, hotels, factories, etc., are especially urged to have their employees vaccinated, and when this has been done the department proposes to place them on a "white list" to which publicity is to be given through the bulletins of the board and otherwise, as being places protected against small-pox and safe for persons to visit.

NORTH CAROLINA

Hospital Notes.—The city council of Wilmington has decided to increase the annual income of the James Walker Memorial Hospital from $6,000 to $9,000.——The McDaniel Memorial Hospital, Kinston, has changed its name to the Parrott Memorial Hospital. It has an authorized capital stock of $25,000. An additional building of brick and stone has been erected, and will contain surgical rooms and nurses' quarters.——Dr. Isaac M. Taylor, Morganton, proprietor of the Broad Oaks Sanitarium, has purchased Catawba Heights, near Morganton, and will establish a sanatorium there.

Personal.—A banquet was given in honor of Dr. Lewis G. McBrayer, Asheville, by the Buncombe County Medical Society, March 28.——Dr. M. Hall Fletcher, Asheville, has been appointed local surgeon of the Southern Railroad.——Dr. William T. Rainey was operated on for appendicitis at Highsmith Hospital, Fayetteville, March 26.——Dr. Thomas A. Norment, Lumberton, has resumed practice after an absence of several months.——Dr. William T. Parrott, Kinston, fractured his forearm and two ribs while cranking his motor-car recently.——Fire at Durham, March 25, destroyed the offices of Drs. Robert L. Felts, Rufus J. Teague, Burton W. Fassett, S. Dace McPherson, Lyle S. Booker and Norval L. Coiner, all of whose offices were located in the Duke Building.

OHIO

Small-Pox.—It is interesting to note in the annual statement submitted by Chief Medical Inspector, William H. Peters, of the Department of Health, that forty-five cases of small-pox were reported during the year, thirty-eight of which had never been vaccinated, and not one of which had been vaccinated during the past seven years. This report is entered as a strong plea in favor of vaccination.

Board of Health.—The recent controversy which took place between the Mayor and the Board of Health has been very satisfactorily adjusted. In view of the excellent character of the service rendered by the present board throughout its administration, great pressure was brought to bear by its friends, both personal and professional, by business organizations and various civic bodies, to the effect that the members were induced to withdraw their resignations and resume their official duties, thus putting an end to a very deplorable situation.

Personal.—Dr. Robert Austin, Xenia, has been appointed pathologist and second assistant surgeon to the St. Mary's Hospital, Rochester, Minn.——Dr. De Witt T. McGriff, Lima, is in the City Hospital on account of an accident in which his automobile was struck by some cars which were being switched on the Erie Railroad.——Dr. Louis F. Bucher, Dayton, has been reelected president of the League of German-American Societies.——Dr. and Mrs. Charles W. Thomas, Warren, gave a dinner in honor of Dr. Clarence S. Ward on the anniversary of forty years of service in the practice of medicine in Warren.

Ruling on Plumbing Code.—The attorney-general of the state of Ohio has recently ruled that the state plumbing code is the minimum standard code of Ohio, and is effective in all communities in the state whether local regulations have been promulgated or not. About thirty municipalities have adopted regulations concerning plumbing, and the same number have local systems of plumbing inspection. The state plumbing inspector and his assistant have sole jurisdiction in enforcing the plumbing code in all other parts of the state. An attempt is being made to increase the force of local inspectors, and the campaign is meeting with some measure of success.

Tuberculosis Hospital.—On March 31, the ground was broken for the additional building of the Cincinnati Tuberculosis Hospital. Dr. Christian R. Holmes, in addressing the gathering, gave an interesting history of the growth of the work done in connection with the tuberculosis movement, and submitted some valuable suggestions for its continued progress. He laid particular stress upon the suggestion that provision should be made by the city to give professional nursing to the middle classes afflicted with tuberculosis in its early stages,

this service to be furnished at a moderate rate, within the means of the patient. Dr. Simon F. Cox, of Boston, gave some very interesting data connected with his study of tuberculosis in European sanatoria, drawing therefrom conclusions which furnished valuable suggestions for the work in Cincinnati.

Public Health Exhibit at Newark.—A new feature was added to the Public Health Exhibit of the Ohio State Board of Health in Newark, when a local newspaper, the *Advocate*, undertook a health contest. Coupons were printed in each issue and these could be exchanged for attendance coupons after each public health lecture. Three attendance coupons rendered the owner eligible to enter the contest. Each person submitted ten suggestions for the betterment of health conditions in Newark, and there were three prizes offered, $50 in all. This plan was so successful in Newark that it was continued in Zanesville and Coshocton, where it met with the same success. Not only was the attendance at the public health lectures increased but more interest was taken in local sanitary conditions, and the suggestions offered were in many cases not only interesting but of practical value.

State Board Ruling as to Dumping Refuse.—The local board of health of Put-in Bay requested the State Board of Health to define their authority in controlling the dumping of refuse into Put-in Bay from boats lying alongside the docks. Thousands of day excursionists come to this summer resort, eat their lunches on board and the refuse is afterward dumped into the bay. Much of it is carried in shore and lodges there, creating a condition that is not only unsightly but becomes a nuisance when there is putrescible matter in the refuse. This condition is found not alone in Put-in Bay but at all summer resorts fronting Lake Erie. This inquiry of the local board of health was forwarded to Attorney-General Hogan who ruled that such board had ample power and jurisdiction to provide for the abatement of the nuisance in question, and that such power also resided in the legally constituted board of health of any township. This decision is of great moment to all boards of health having jurisdiction along the lake front.

OKLAHOMA

Personal.—Dr. Loyal M. Martin, Newkirk, recently sustained a fracture of the scapula in an automobile accident.

Hospital Notes.—The Muskogee City Hospital has been turned over to the Physicians' and Surgeons' Hospital Association of that city, recently incorporated by Drs. Francis B. Fite, Sessler Hoss and Frederick J. Wilkiemeyer, Muskogee. ——A movement has been started to construct a hospital at Bartlesville.

New Officers.– Adair County Medical Society: president, Dr. David A. Beard, Westville; secretary-treasurer, Dr. Charles M. Robinson, Stillwell.——Pottawatomie County Medical Society: president, Dr. John E. Hughes; secretary-treasurer, Dr. Walter C. Bradford, both of Shawnee.——Woodward County Medical Society: president, Dr. Fred L. Patterson, Fargo; secretary-treasurer, Dr. Jesse J. Davis, Woodward.—— Woods County Medical Society at Alva, March 31: president, Dr. Romulus Z. Linney, Hopeton; secretary, Orion R. Gregg, Alva.

PENNSYLVANIA

Trachoma at Farrell.—Fifteen cases of trachoma have been reported among the employees of the Carnegie mills at Farrell and the situation is under investigation by the State Health Commissioner.

Personal.—Dr. George A. Stock, superintendent of the State Tuberculosis Dispensary, Danville, has retired, and has been succeeded by Dr. Cameron Schultz.——Dr. Edward G. Heyer Hazleton, has been elected superintendent of the Nanticoke Hospital, vice Dr. August Traphold, resigned.

Small-Pox in Hospital.—Owing to the discovery of a case of small-pox in the Homeopathic Hospital of West Chester, that institution has been quarantined for sixty days. The entire hospital staff consisting of five doctors and eleven nurses was vaccinated on March 20, as well as the forty-eight patients. There are a number of cases at Toughgenomen and Kennett Square and all schools and churches are closed. Dr. Charles J. Hunt of the State Health Department has ordered guards stationed at all houses where the disease exists.

Philadelphia

Hospital Purchases Site.—The Northeastern Hospital has purchased for $7,000 a plot of ground on the north side of Allegheny Avenue 100x80 feet.

New Ward for Jewish Hospital.—Work has been commenced on the two-story medical ward building for the Jewish Hospital, to cost $60,000.

Piggeries to Move.—On March 22, inspectors from the Department of Health and Charities obtained signed agreements from twenty raisers of pigs that they would vacate their present premises immediately. Those who fail to comply with the law will be liable to a fine of $25, and of $5 a day thereafter until they move.

Personal.—Dr. Joseph S. Neff, who has been ill since December last, is convalescing, and has resumed his work as director of the Department of Public Health and Charity.——Dr. John Wanamaker, III, has been assigned to permanent service at the Central Station at City Hall as police surgeon. Heretofore this station had no surgeon of its own.

Plans of the Child Federation.—The future plans of the Child Federation include health centers to concentrate the efforts of the nurses and doctors and investigators of the most densely populated square of this city, which is said to contain forty-one thousand people. The work will start on May 1 and continue until October 1. Efforts will be made to eliminate bad plumbing and insanitary conditions and to conduct a systematic campaign of education with practical demonstration.

County Society Permanent Home Appeal.—Substantial progress can be reported in the popular movement for a building for the Philadelphia County Medical Society. The Members' Committee of Twenty, that includes some of the most astute financiers in the profession, having a number of eligible properties in view, has decided to call for pledges, subscriptions and contributions to ensure a fund of $40.000 or $50,000. This, in addition to the permanent funds of the Society, will furnish a working capital that must assure success.

Nurses' Home.—Contractors are estimating on the plans for building of the Germantown Hospital to be used as a nurses' home, with accommodations for about sixty-five nurses. The building will be fire-proof, and will contain reception rooms, suites for the directress of nurses, and rooms for head nurses. A special feature of the building will be the large recreation or sun rooms on the roof, and a tile roof garden with open porch and sleeping porches. Another feature is the fact that there will be more shower baths than bath tubs.

Psychopathic Wards at Blockley.—A great change is under way in the section of the Philadelphia General Hospital in which suspected cases of insanity are temporarily confined. This includes an equipment of at least 140 beds, and a system of treatment that will enable the patients to return to their homes, under the supervision of social workers, instead of being sent to an asylum for the insane. Under the old system, committing physicians simply made an examination of the patients referred to them, and prepared papers for their commitment and admission to asylums.

Big Corporations Cooperated in "Clean-Up Week" Movement.—Department stores, merchants, public utility corporations and hundreds of business men in every line of trade throughout the city are heartily entering into the spirit of the "municipal clean-up week" movement, April 20 to 25. Correspondence of business firms, department stores, manufacturers and shopkeepers throughout the city, is being labeled with an attractive blue paster, "Remember Clean-Up Week, April 20 to 25, Philadelphia, 1914," as is also the correspondence of the various departments and bureaus at city hall.

GENERAL

Missouri Valley Meeting.—At the semi-annual meeting of the Medical Association of the Missouri Valley, held in Lincoln, Neb., March 27, it was decided that the next annual meeting should be held in Des Moines and Colfax, Iowa—one day in Des Moines, and two days in Colfax.

A Warning.—A man claiming to be a physician has been calling on medical colleges, medical publishers and physicians, and demonstrates various dislocations, throwing joints out of sockets, etc. Incidentally he claims that he is subscription agent for prominent publishers, and on furnishing seemingly reliable references, borrows text-books from the party on whom he calls, and is seen no more.

Bi-State Association Organized.—Physicians of Modoc County, California, and Lake County, Oregon, met for organization at Alturas, Cal., March 30, with an initial membership of eighteen. The organization is to be called the Modoc County, Cal., and Lake County, Ore., Medical Association. The following officers were elected: president, Dr. John Stile, Alturas; vice-president, Dr. Hiram B. Ehle, Milpitas, Cal.; secretary-treasurer, D. Walter E. Coppedge, Alturas. The next meeting will be held at Lake View, Ore., in June.

Bequests and Donations.—The following bequests and donations have recently been announced:

Presbyterian Hospital and St. Luke's Hospital, Chicago, Chicago Visiting Nurse Association, and Chicago Home for Incurables, each $10,000, and Alice Home, Lake Forest, Ill., $5,000. St. Luke's Hospital, Chicago, $500, toward the up-keep of the Solomon H. Smith ward, by the will of Byron L. Smith.

Presbyterian Hospital, Chicago, $10,000, by the will of Frederick William Crosby.

Chicago Charity Hospital, and Chicago Home for Incurables, each $75,000, by the will of Kenneth S. Wallbank, on the death of his wife.

Associated Jewish Charities, $5,000, Chicago Visiting Nurse Association, $500, and Chicago-Winfield Tuberculosis Sanatorium, $3,000, by the will of Isaac Wedeles.

Gil W. Barnard Hospital Association, Chicago, a site valued at $20,000, from J. Newton Roe.

German Hospital, Chicago, $5,000, by the will of Michael Ullrich.

Neversink Mountain Tuberculosis Sanatorium (Pa.), $1,000 donation by the Berks County Commissioners.

St. Luke's Hospital for Women, Shanghai, China, $3,000, by the will of Mrs. Eliza Callahan Stevens, Jamaica Plain.

Methodist Hospital, Philadelphia, $1,000, by the will of Joseph Patten, Columbus, Pa.

St. Vincent's, St. Francis' and St. Joseph's Hospitals, New York City, each one-eighth of the estate of James J. Dunne, valued at more than $20,000.

St. Vincent's Hospital, New York City, $1,000, by the will of William Lummis.

St. Luke's Hospital, New York City, $15,000, for the endowment of three beds, by the will of Mary B. Lane.

Camps of Instruction for Medical Officers.—General A. L. Mills, chief of the Division of Militia Affairs, announces that during the coming summer camps will be established for medical officers and non-commissioned officers of the Hospital Corps of the Organized Militia. It is contemplated to provide these camps with complete regimental hospitals and infirmaries, and such other paraphernalia as may be necessary to offer every facility for a thorough course of instruction. These camps are to last six days, the instruction beginning Monday morning and terminating at noon on Saturday. These camps will be located as follows:

Plattsburg Barracks, June 7-13, for medical officers of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York.

Fort Myer, Virginia, May 17-23, for medical officers of Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, and the District of Columbia.

Fort Oglethorpe, Georgia, May 10-16, for medical officers of North Carolina, South Carolina, Georgia, Florida, Mississippi, Tennessee, Kentucky and Alabama.

Fort Sheridan, Illinois, May 24-30, for medical officers of Ohio, Illinois, Indiana, Minnesota, Wisconsin, Michigan, North Dakota and South Dakota.

Fort Leavenworth, Kansas, May 17-23, for medical officers of Kansas, Missouri, Oklahoma, Iowa, Nebraska, and Arkansas.

Fort D. A. Russell, Wyoming, June 7-13, for medical officers of Montana, Wyoming, Utah, and Colorado.

Fort Sam Houston, Texas, May 17-23, for medical officers of Texas, Louisiana and New Mexico.

Vancouver Barracks, Washington, June 7-13, for medical officers of Washington, Oregon and Idaho.

Presidio of San Francisco, May 10-16, for medical officers of California and Arizona.

The program of instruction includes the detail of preparing the sanitary personnel of the different units for the field, discipline and education of the Hospital Corps, training of medical officers, and equipment with the regulation supplies and transportation, with the position of the personnel and divisional sanitary units on the march and on the battlefield. During the course, practical talks and lectures on military subjects of interest to medical men will be given by line officers at the posts. In the evenings, the work of the day will be discussed, all members of the class being encouraged to join in the discussion.

CANADA

New Brunswick Sanitarium.—In their report to the provincial government of New Brunswick, the commissioners of the New Brunswick Sanatorium state that many improvements will be added during the present year to the Jordan Sanatorium, and recommend that $7,000 be expended in completing the capital expenditure. This will provide a laboratory, quarters for male help, etc. The original gift of Mrs. J. C. Jordan for this institution was $104,195, while the government has expended $24,802.27.

Personals.—Dr. Charles O'Reilly, Toronto, has returned from the Southern States very much improved in health.——Dr. Kennedy C. McIlwraith, Toronto, has gone abroad for several months for hospital work.——Dr. Reginald A. Jones, Toronto, is visiting the New York hospitals.——Dr. J. J. Middleton has returned to Toronto after six months in Great Britain.——Dr. James F. Cattermole, physician at the Penetanguishene Hospital, has been transferred to the Woodstock Hospital for Epileptics, Ontario.——Dr. John A. McCollum, Toronto, has been spending several weeks in Jamaica.

Pathologists to Meet in Toronto.—On Friday and Saturday, April 10 and 11, the American Association of Pathologists and Bacteriologists met in Toronto, under the presidency of Prof. J. J. McKenzie of Toronto University; on Thursday preceding the International Association of Medical Museums met in the Pathological Department of the University. Prof. R. M. Pearce of Philadelphia was the president. The American Association for Cancer Research met in the Toronto General Hospital the same day. The latter was under the presidency of Dr. Ernest E. Tyzzer, Harvard University Medical School, Boston.

Ottawa for Mechanical Filtration.—The citizens of Ottawa voted on March 31 on the question of a pure water-supply. Sir Alexander Binnie, the well-known British expert, had reported on and in favor of an unfiltered water-supply from Thirty-One Mile Lake at a cost of $8,000,000. The city engineer and the mayor were in favor of mechanical filtration of the Ottawa River water at a cost of $2,000,000. The latter gained the day by a vote of 7,544 for mechanical filtration and one of 6,236 for the Binnie alternative. The city will now proceed to the Ontario Legislature for legislation to raise the money.

Ontario Board of Health Supplying Antitoxin.—The Ontario Board of Health has made arrangements to supply antidiphtheric serum to local boards of health and druggists throughout that province. The prices are greatly reduced from what is ordinarily paid for these goods. The antitoxin is of standard quality 30 per cent. in excess of that marked on the label. In syringe packets, 5,000 units will cost boards of health $1.35; to druggists, $1.70; 10,000 units, $2.60 and $3.25. It is also furnished in vials at a less rate. The Ontario Board of Health feels that this arrangement lowers the price of antitoxin in Ontario below that of any other place in the world. Medical practitioners are not to be supplied directly with the serum, but may order through certain dealers and druggists or boards of health.

The University of Toronto Faces Financial Crisis.—Unless the government of Ontario comes to the aid of the University of Toronto, this first-class institution will not be able to maintain its place as an institution of higher education. Plain facts have been placed before the government by Sir Edmund Walker, chairman of the Board of Governors, and President Falconer. Although an appointment had been arranged beforehand, only twenty-six members of the legislature were present at the conference between the government and the two aforesaid gentlemen. Sir Edmund showed how the university had grown from 500 students to 4,200, and that when the standard was raised a few years ago it went back to 3,500, but had again come up to 4,000. It was utterly impossible to check the flow of students to the institution. Although no new buildings are urgently needed, there was great necessity for new and enlarged equipment, while the teaching staff was numerically too small. It is a hardship on the governors to pare down the salaries of the three or four hundred men who are following academic life. Either the Governors would have to lessen the attendance, raise the fees or get an increased income. The deficit for the present year is $85,000 and it will be $120,000 for the coming year. In all he estimated the requirements of the university at $1,400,000. President Falconer by producing figures showed that Toronto was among the big institutions of America and that private munificence could no longer be depended on to meet the situation. It is understood that the Western University at London will strongly oppose any further aid at this time to the University of Toronto from the provincial purse.

LONDON LETTER

LONDON, March 20, 1914.

Infection from Library Books

Dr. R. Kenwood, health officer for the Borough of Stoke Newington and professor of public health, University of London, delivered an interesting lecture on "Books and Infection" in which he described some recent experiments. He said it had been stated that there was no case on record of book infection, and he admitted that he had not been able to trace any record of such a case; but he said that it was not by any means conclusive that such infection did not take place, for as health officer he was not able to trace the source of infection in 80 per cent. of the cases that came under his notice. The views of bacteriologists amounted to a general consensus

of opinion that books might be a means of conveying infection, but there was an equally general opinion that books rarely conveyed infection. Few experiments had been made under the essential conditions of a true test. Most of them had been performed on artificially cultivated germs, which developed greater powers of resistance than germs coming direct from the human body. For the purposes of a true test a patient should be made to infect a book. In his own recent experiments he had pursued that course. The disease which he had selected was consumption; and the books were from two public libraries and from a sanatorium, and in all cases were used by consumptive patients. The methods of infection were of three kinds, namely, coughing on a book, reading aloud with the lips near the book, and smearing or damping the corners of pages after the manner of persons who wet their thumbs to turn the leaves. With the germs obtained by the first two methods a number of guinea-pigs were inoculated, but negative results were obtained in every instance. When, however, the guinea-pigs were inoculated with germs obtained from the sputum used on the wetted corners of leaves, microscopic examination of the tissues of the animals proved the existence of the disease. In another series of experiments a book which was infected by the coughing of an infirmary patient was employed for inoculating six guinea-pigs, but only one was infected. None of these experiments was entirely satisfactory. For instance, the wetted pages were more heavily smeared than they would be in actual practice on the part of the book-readers, and the experiments were being repeated under conditions more nearly approximating to those of ordinary experience. Then, again, there was the important fact that the dosage which would be sufficient to infect a guinea-pig would not have the same effect on a human being. Another series of tests related to the effects of disinfection. These produced varying results. Dr. Kenwood had obtained positive evidence of the persistence of infection after books had been disinfected by the methods ordinarily employed, but when moist heat was employed the germs were destroyed, and this was the method which he recommended.

Tropical Sanitation and Hygiene

The London School of Tropical Medicine has decided to start a special course in tropical sanitation and hygiene. It is proposed to hold two courses annually, commencing May 1 and October 1, each extending over a period of eight weeks. Hygiene and public health in the tropics, port hygiene, the care of the sick on board ship in the tropics, surveying and sanitary engineering, bacteriology, protozoology, helminthology and medical entomology will all be treated by experts. Practical demonstrations will also be given, the general desire of the committee of the school being to make the course as practical as possible, and not to let theory play too great a part. The course is the application of the results of much laborious and painstaking research in the laboratories. Manson and Ross' scientific work on malaria led the way and showed how this common source of illness and death can be stamped out. This in turn led to the abolition of yellow fever in Cuba and the West Indies and made the Panama Canal possible. Bruce's researches on undulant fever have resulted in the abolition of that disease from the navy and army in Malta.

Scarlet Fever and Fleas

In the annual report of the school medical officer to the London county council, an interesting observation is made suggesting that scarlet fever may be a flea-borne disease. From the beginning of 1909 onward, attempts have been made to obtain a detailed record of the seasonal prevalence of fleas in London. Until last year the inquiry was limited to observation of flea prevalence as affecting persons of the common lodging-house class. At the end of last year, however, it was possible to secure the additional information on the subject made available by the examination of pupils of elementary schools. The results have been published in the form of graphic charts, all of which show a great increase of fleas during late summer and autumn and a rapid decrease toward the end of the year. The curious feature of these records is that the curve obtained in respect to flea prevalence is almost identical with that of the incidence of scarlet fever in London.

BERLIN LETTER

BERLIN, March 24, 1914.

In the interval which has elapsed since publication of the last Berlin letter a considerable number of important events have occurred, the most important of which will be reviewed.

Personal

The first to notice is the sixtieth birthday of two of our most prominent scientists, Ehrlich and Behring. The former was born on the 14th, the latter on the 15th of March. While with Germany as with the rest of the civilized world, the seventieth birthday is commonly the occasion of public honor, there was good reason in the case of such noted investigators to make an exception and to give expression to the general esteem and gratitude of their contemporaries on their sixtieth anniversary. In fact there is no doubt that the greatest therapeutic progress of the present age has been achieved by these twin sons of science and humanity. Diphtheria antitoxin which met many opponents in the first decade after its discovery is regarded to-day as ineffective only by a few. With the discovery of this remedy alone Behring earned his claim to genius and the right to be classed with Jenner among the greatest benefactors of humanity. Moreover, his other labors on tetanus antitoxin, tuberculosis serum, etc., although they have not secured by any means, as brilliant results as the diphtheria antitoxin, are marked scientific achievements which have enriched the investigation of serotherapy.

Ehrlich cannot show as great and undisputed achievements, but his important cooperation with the work of Behring in making the diphtheria remedy useful in practice, his recommendation of methylene blue in malaria, one of the first products of his chemical therapeutic studies, and a number of similar discoveries terminating in salvarsan, have given him a place among those great minds to whom science and medical practice owe lasting progress. This recognition also received expression at the celebration of his birthday. Among other things, Behring was made an honorary citizen of Marburg where, as is well known, he has been acting as professor of hygiene for nearly two decades. Ehrlich received from the dermatologists a complimentary address in which they expressed their gratitude for the discovery of salvarsan.

February 4, the senior of the German medical profession, Friedrich Körte (the father of the noted surgeon), died at Berlin at the age of 96. He rendered marked service in the economic crises of the medical profession and, in addition to this, was highly esteemed by all German physicians on account of his excellent character.

February 12, the director of the Breslau Pharmacologic Institute, Professor Filehne, celebrated his seventieth birthday and on the 16th, the noted naturalist, Ernest Haeckel, of Jena, celebrated his eightieth birthday.

February 18, Professor von Hippel, of Giessen, celebrated the semi-centennial of his doctorate.

Professor Nietner, general secretary of the German Central Committee for the campaign against tuberculosis, died February 12. He devoted himself to the organization of the German Central Committee and has also produced some excellent articles on the campaign against tuberculosis of the lungs. In 1907 he was general secretary of the International Congress of Hygiene at Berlin, which was lauded by all the participants for its excellent organization. He was also a co-editor of the *Zeitschrift für Tuberkulose*.

In the last-named position he has been succeeded by the well-known investigator of tuberculosis, Prof. Lydia Rabinowitsch-Kemper. She was the first woman editor of a German medical journal.

February 28, Professor Joachimsthal, director of the University Policlinic, died at Berlin. He was a pupil of the distinguished orthopedist, Julius Wolff. He became the assistant of Wolff, who was his uncle, after passing the state examination. In 1898 he joined the faculty of the Berlin University. In 1902 he was granted the title of "professor" and, after the death of Hoffa, he was made director of the University Orthopedic Policlinic. He has published a great number of excellent scientific articles. In 1897 he was awarded the Pourat prize by the Paris Academy of Science for his essay on the "functional changes in the shape of muscles." He studied on animals the physiologic effect of orthopedic measures and made a number of contributions to the treatment of the congenital dislocation of the hip-joint by which he improved the Lorenz method.

Among his larger works, should also be noticed his articles on congenital deformities of the extremities. He published a large "Handbush der orthopaedischen Chirurgie" and, after the death of Hoffa, he became the editor of the *Zeitschrift für orthopaedische Chirurgie*. He was president of the Deutsche Gesellschaft für orthopaedische Chirurgie.

The orthopedic surgeon, Professor Ludloff, received early in March, a call to the university at Frankfort-on-the-Main, which will be opened the first of October of this year, in all probability.

Professor Kraus of Marburg has been appointed director of the eye clinic at the academy of practical medicine at Düsseldorf, following the death of Professor Pfalz.

Dr. R. L. Müller, a brother of the distinguished Munich clinician, has been called to Würzburg as the director of the University Policlinic for internal medicine in place of Professor Matterstock. Dr. Müller has been heretofore in charge of a department of the municipal hospital at Augsburg.

March 12, the former director of the Berlin University gynecologic clinic, Professor von Olshausen, celebrated the fiftieth anniversary of his professorship.

Fatal Results with Friedmann Vaccine

Professor Vulpius, professor of orthopedics at the University of Heidelberg, together with Privat-docent, Dr. Laubenheimer, assistant at the Heidelberg Hygienic Institute, published an article in Number 10 of the *Deutsche med. Wochenschrift*, in which they reported a fatal case which presented symptoms of sepsis following the intravenous injection of Friedmann's remedy. (Abstract 139, p. 1206.) Naturally this publication aroused interest. It may well cause practicing physicians to exercise caution in the use of the remedy. Friedmann did not wait long before opposing the threatened injury to his remedy with the help of the daily press, the confidence of which he enjoys so fully.

A statement in which he protested against the publication of the article by Vulpius and Laubenheimer, was printed in a number of daily papers, by the news bureau, with an introduction to the effect that it had been given to the *Deutsche med. Wochenschrift*. It did not appear in this journal, however. It would seem, then, that the close relations of Friedmann with the daily press, which had been suspected on account of his wide-spread advertisements soon after his first address, were established with certainty. In addition, Professor Vulpius, in the article referred to, reported that in forty patients whom he had treated with Friedmann's remedy, he had noticed no changes which he could attribute to the remedy itself, although, as he adds, the time of observation is still too short for a decisive opinion.

However, Professor Brauer, the well-known director of the Eppendorf hospital at Hamburg, at the congress of balneology, also gave an account of unfavorable results which he had had in the application of Friedmann's remedy. On this account he has given up the continuation of his therapeutic tests. So far no further experiences with the Friedmann remedy in Germany have been reported.

A Movement Against Salvarsan

Still greater interest than that excited by the single case of Vulpius and Laubenheimer has been created in the public mind by an article by the Berlin dermatologist, Dr. Dreuw, against salvarsan. Dreuw, from a review of the literature and from communications which he obtained by a circular letter to dermatologists, claims that nearly three hundred deaths have resulted from injection of salvarsan and, in addition, a series of other severe injuries, particularly cases of blindness. On the basis of this determination, he demands from the government at least an exact limitation of the maximum dose of salvarsan and, if possible, a prohibition of the further use of so dangerous a remedy. This publication was sent out widely by a news bureau to the public press and naturally produced great alarm among the public because Dreuw, from his position as police department physician for prostitutes, gave the impression that he was an official. His reference to an interview which he had had some time before with the president of the imperial health office on this subject, gave further the impression that the president agreed with his course. Naturally, the press, friendly to Dr. Dreuw, especially the anti-Semitic press, took up the agitation against salvarsan, and made it its aim to make the public believe that the use of salvarsan was attended with the greatest danger. Not only the reputable newspapers but also the government opposed this agitation. The government was given opportunity for expression of an opinion through an interpellation addressed to the imperial chancellor by a medical member of the Reichstag. In the Reichstag, March 6, a representative of the government made an official reply in the name of the imperial chancellor: (The appeal and the reply were given in THE JOURNAL, April 4, p. 1105.)

The effect of this official statement was strengthened by an extensive discussion on the treatment of syphilis which took place a few weeks ago in the Berlin Medical Society, following reports by Professor Lesser and Wechselmann. This discussion had been planned a long time before Dreuw's communication was published. While the conservative and unprejudiced speakers in this discussion refrained from exaggerated praise of salvarsan (which, unfortunately, was too much indulged in at the beginning of the salvarsan treatment) still the general verdict with regard to the remedy was thoroughly favorable, and it was recognized to a greater or less extent by all the speakers, that in salvarsan the treatment of secondary and tertiary syphilis had made an essential advance.

BUDAPEST LETTER

BUDAPEST, March 14, 1914.

Combined Dispensaries for Alcoholics and Lung Patients

The Hungarian Antialcoholism League has begun action toward uniting the dispensaries for alcoholics and for lung patients, with a view to reaping the following advantages:

1. A given locality would be better served if separate hours were assigned for the two purposes.

2. The same attending physicians could be employed for the institutions.

3. The systematic family care of the tuberculous patients would be more successful through being carried on in conjunction with the alcoholic work.

4. The misery of the alcoholic family, its suffering, privations, bad food, unhealthful living and the overworking of the women and children often lead to tuberculosis, which could be effectively combated at the same time that alcoholism was being worked against.

5. A habitual drinker can be prevailed on to change his ways much more easily if he sees that the caretaking nurse deals also with other members of the family.

6. The mending of an alcoholic sometimes succeeds only if the nurse enlightens the drinker's wife in a corresponding manner.

7. The work of the caretaking women is well known to the magistrates and the leaders of the poverty committees, and therefore they obtain easier access to the alcoholic head of the family while he is at work. By reason of the direct observation of the families the nurses gain more experience.

9. Alcoholic and tuberculous families generally live near each other and thus the nurse loses little time in visiting both kinds of families.

The Regulation of Public Bars

It has been the custom in Hungary for bars to remain open the whole night, even on Sundays, and in most places barmaids are employed to serve the guests. Both these points have been severely criticized lately in *Antialcoholismus*, the official paper of the "Good Templar" branch. The articles, were republished in the newspapers, with the result that about thirty members of parliament are proposing a new bill for the regulation of public bars. The chief purposes of the new bill are the prohibition of female service after a certain hour in the night, and the closing of bars on Sundays.

The International Office to be Organized for the Unification of the Pharmacopeias

The Austro-Hungarian common foreign secretary has written to the Hungarian government asking it to support morally and materially the establishment of an international secretarial office for the purpose of unifying the pharmacopeias. In 1896 the Austrian, Danish, Spanish, Italian, Luxembourg, Holland, Norwegian, Russian and Swiss governments adopted the plan, but the Hungarian government has held back. The Belgium government believes that the time is ripe for other countries, including Hungary, to cooperate. According to the tentative plan, each government would contribute 2,000 francs ($400) toward the maintenance of the office, the task of which would be to study according to the progress of science the unity of production and composition of efficacious medicines in the different pharmacopeias, that is to say to continue and to extend that work which was done by the international conference at Brussels in 1902, and to prepare the program of a newer conference. The seat of the international office would be Brussels, and it would be controlled by a committee which would be composed of the delegates of the different states partaking in the maintenance of the office.

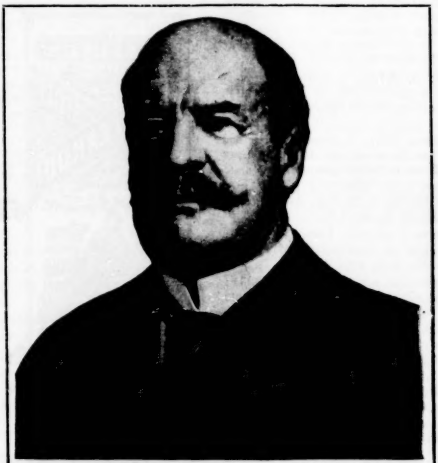
The Hungarian Public Health Board had a meeting some days ago, and the president, Prof. Arpád de Bokay, has proposed (this having been accepted by the board unanimously) that Hungary shall definitely accede to the establishing of the office, and that the board shall appoint a delegate who shall go to the new conference, and shall be authorized to sign any understanding which he may deem proper.

Deaths

Joseph Decatur Bryant, M.D., of wide renown as a surgeon, the Nestor of the faculty of Bellevue Hospital Medical College, president of the American Medical Association in 1907 and 1908, Surgeon-General of the National Guard, State of New York, from 1882 to 1894, died in St. Vincent's Hospital, New York City, April 7, from diabetes, aged 69.

He was born in East Troy, Walworth County, Wis., March 12, 1845, the son of Alonzo A. and Harriet (Atkins) Bryant. His preparatory collegiate work was done at the Norwich (N. Y.) Academy, after which he entered Bellevue Hospital Medical College, New York City, graduating in 1868. After his internship in Bellevue Hospital, he became assistant to the chair of anatomy in his Alma Mater in 1871, and then passed through the teaching positions of lecturer on surgical anatomy, assistant demonstrator of anatomy, professor of general, descriptive and surgical anatomy, professor of anatomy and clinical surgery, and associate professor of orthopedic surgery until 1898, when at the merger of the University and Bellevue Hospital Medical colleges he became professor of the principles and practice of surgery, operative and clinical surgery, holding this position until his death.

In addition to this teaching service, which extended over more than forty years, Dr. Bryant served as sanitary inspector in the Health Department of New York City for six years, as commissioner of health, and commissioner of the New York State Board of Health for six years, and as attending and consulting surgeon for many hospitals. In addition to his Fellowship in the American Medical Association, he served as president of the New York State Medical Association in 1898; of the Medical Society of the State of New York in 1906, and of the New York Academy of Medicine in 1895. He was also a fellow of the American Surgical Association, a member of the Association of Military Surgeons of the United States and of many other scientific organizations.



JOSEPH DECATUR BRYANT, 1845-1914

In 1873, he was appointed surgeon of the Seventy-First Infantry, N. G., S. N. Y., and nine years later was made surgeon-general of the state. His talent for organization came into play here in 1882, when he organized the Medical Department of the Guard on a basis which placed it in a position it still retains, foremost among the medical corps of the organized militia of the United States. In 1895, Brigadier-General Bryant resigned from the guard. During his term of service he passed through many tours of riot duty.

He was an author of note, and his work on Operative Surgery, which has passed through four editions, is one of our best text-books. He was co-author with Buck of the eight-volume American System of Surgery, and was also a frequent and valuable contributor to surgical literature.

He was the family physician and warm personal friend of President Cleveland, and was his close associate in his many travel and fishing trips.

Dr. Bryant had been ill for a long time with diabetes, but despite his disability, kept up his interest in professional and public affairs to the last.

Theodore E. Courtright, M.D. Starling Medical College, Columbus, Ohio, 1884; a Fellow of the American Medical Association; of Columbus, Ohio; died in St. Clair Hospital in that city, March 25, three days after a surgical operation for disease of the intestine, aged 53.

Charles H. Neal, M.D. Western Reserve University, Cleveland, 1883; a member of the Ohio State Medical Association; died at his home in Cardington, Ohio, February 23, aged 49.

Oliver Kinsey, Jr., M.D. Johns Hopkins University, Baltimore, 1911; of Kinsey, N. C.; resident physician at the Church Home and Infirmary, Baltimore; who had passed the examination for the Medical Corps of the Army, but resigned to take special work in diseases of the skin; was found dead in his room in Baltimore, March 24, from the effects of illuminating gas, believed to have been inhaled with suicidal intent, while despondent on account of ill-health, aged 28.

John Thomas Shepherd, M.D. University of Maryland, Baltimore, 1874; acting assistant surgeon, U. S. P. H. S. at Chattanooga, Tenn., from 1888 to 1911; physician to the Hamilton County Hospital, and formerly president of the Hamilton County Board of Health; a member of the Association of Military Surgeons of the United States; a Confederate veteran; died at his home in Chattanooga, Tenn., March 22, from valvular heart disease, aged 65.

George Parker Williard, M.D. Jefferson Medical College, 1867; a member of the Ohio State Medical Association, and Northwestern Ohio Medical Association; a veteran of the Civil War, in which he served as hospital steward; and the oldest practitioner of Seneca County, Ohio; a member of the board of directors of the Commercial National Bank, Tiffin, Ohio; died at his home, March 20, from pleuropneumonia, aged 68.

James P. Moser, M.D. Cincinnati College of Medicine and Surgery, 1876; secretary of the Tipton (Ind.) County Board of Health; died at his home in Windfall, Ind., March 19, from pneumonia, aged 64.

Patrick Vincent Murray, M.D. Long Island College Hospital, Brooklyn, N. Y., 1870; Bellevue Hospital Medical College, 1875; of Warren, Pa.; died suddenly in New York City, March 13.

Alvin Isaac Miller, M.D. Hahnemann Medical College, Philadelphia, 1872; for more than twenty years a practitioner of Harrisburg, Pa.; died at his home in that city, March 26, aged 64.

A. H. Moore (license, Sixth Judicial District Board, Tex., 1884); formerly of Bonham, Tex.; aged 72; was gored to death by a bull in a pasture near his home in San Angelo, Tex., March 23.

Come Alfred Dugas, M.D. Victoria University, Coburg, Ont., 1887; for twenty years coroner's physician of Montreal; died at his home in that city, January 7, aged 49.

Leander F. Murray, M.D. Louisville (Ky.) Medical College, 1876; a member of the Missouri State Medical Association; and local surgeon at Holden, Mo., for the Missouri-Pacific and Missouri, Kansas and Texas systems; a member of the board of trustees of the Nevada, Mo., State Hospital; died at his home in Holden, Mo., March 21, aged 66.

Thomas James Moher, M.D. Trinity Medical College, Toronto, 1889; formerly medical superintendent of the hospitals for the insane at Orillia and Brockville, Ont.; for the last three years superintendent of the Hospital for the Insane, Coburg, Ont.; died at his home in Coburg, February 25, aged 52.

Daniel Wright Dimock, M.D. Dartmouth Medical School, Hanover, N. H., 1867; formerly of Brockton, Mass., but for several years a resident of Sydney, N. S.; died at the home of his son in that place, January 5, aged 78.

Levi Hall, M.D. Hahnemann Medical College, Chicago, 1882; formerly a clergyman of the Methodist Episcopal Church; died at his home in Minneapolis, Minn., March 22, from cerebral hemorrhage, aged 80.

Oliver Henry Sterner, M.D. Jefferson Medical College, 1889; a practitioner and druggist of Frankford, Philadelphia; died at his home, March 28, from pneumonia, aged 55.

William R. Nash, M.D. Indiana Medical College, Indianapolis, 1877; formerly of Brownsburg, Ind.; died recently at his home in Fairmount, Ill., aged 72.

Charles A. Kreutzer, M.D. Detroit (Mich.) College of Medicine, 1897; a Fellow of the American Medical Association; professor of gynecology in Marquette University, Milwaukee; visiting gynecologist to the Milwaukee County Hospital, the County Hospital for the Insane and St. Joseph's Hospital, Milwaukee; a charter member of the Surgical Society of the State of Wisconsin; died at his home in that city, March 29, aged 42.

Archibald James Sinclair, M.D. Trinity Medical College, Toronto, 1875; for twenty-five years surgeon of the Grand Trunk system at Paris, Ont.; and for several years a member of the medical staff of the Ontario School for the Blind, Brantford; died at his home in Paris, Ont., March 22.

Marvin M. Johnson, M.D. Medical College of Georgia, Augusta, 1902; a Fellow of the American Medical Association; president of the Ware County (Ga.) Medical Society; for several years physician of Ware County; died at his office in Waycross, Ga., March 21, from rheumatic endocarditis, aged 34.

William H. Parker, M.D. University of Buffalo (N. Y.), 1881; a Fellow of the American Medical Association; for seven years health officer of Santa Monica, Cal.; who was run down by an automobile, March 19, died in St. Catherine's Hospital, Santa Monica, from his injuries, March 20, aged 59.

Henry Stephen Smith, M.D. Detroit College of Medicine, 1911; D.V.S., Ontario Veterinary College, 1889; formerly a member of the staff of the state veterinarian of Michigan; a practitioner of Detroit; died in Providence Hospital in that city, March 21, from pneumonia, aged 49.

James N. Long (license, Texas, 1873); a Confederate veteran; for nearly sixty years a practitioner of Bee County, Texas; died at his home in Beeville, March 12, from influenza, aged 83.

John W. Getzendanner (license, Md.); a practitioner since 1870; of Myersville; died at the home of his daughter near Middletown, Md., March 11, from cerebral hemorrhage.

John Douglass West (license, Ohio, 1896); a practitioner since 1861; a member of the Ohio State Medical Association; died at his home in Hopedale, March 15, aged 87.

Thomas J. Dower, M.D. University of Iowa, Iowa City, 1896; a member of the Iowa State Medical Association; of Fonda; died in Excelsior Springs, Mo., March 3, aged 47.

Ernest J. Schenck (license, years of practice, Illinois 1883); a practitioner of Princeton, Ill., since 1858; died at his home March 15, from heart disease, aged 83.

Theodore Rogers Waugh, M.D. Hahnemann Medical College, Philadelphia, 1872; of St. Alban's, Vt.; died in a sanatorium in Burlington, Vt., March 17, aged 67.

Alvin Henri Wright, M.D. University of Vermont, Burlington, 1890; of San Francisco; died in the City and County Hospital in that city, March 13, aged 46.

Francis Marion Carr (license, Ind., 1897); a practitioner since 1855; died at his home in New Market, Ind., March 18, from senile debility, aged 83.

Clinton E. Thompson, M.D. Denver College of Physicians and Surgeons, 1899; died at his home in Denver, March 11, from cerebral hemorrhage, aged 51.

Channing H. Cook, M.D. Cooper Medical College, San Francisco, 1887; died at his home in San Francisco, March 6, from tuberculosis, aged 53.

Charles Hebard, M.D. Bellevue Hospital Medical College, 1865; died at his home in Mondovi, Wis., March 3, from heart disease, aged 76.

James A. Cole, M.D. College of Physicians and Surgeons, Baltimore, Md., 1886; died at his home in Timmonsville, S. C., March 11.

Thomas Lee, M.D. University of Pennsylvania, Philadelphia, 1876; died at his home in Camden, N. J., March 24, aged 72.

Marriages

EARL LINWOOD PARMENTER, M.D., Mineral, Kan., to Miss Hilda Brand of Chicago, at Kansas City, Mo., recently.

EUGENE GORHAM HOITT, M.D., Marlboro, Mass., to Miss Gladys Hoitt of Vancouver, B. C., March 27.

HARRY NICHOLAS SUTHERLAND, M.D., to Miss Doris Knutson, both of Ely, Minn., March 28.

SAMUEL H. MILLER, M.D., to Miss Ella Boyd, both of Joplin, Mo., March 25.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

WINE OF CARDUI

A Pillar of the Church and His "Patent-Medicine" Tipple

Wine of Cardui is one of those preparations that have more or less vogue among women who take their "booze" in the form of "patent medicine" instead of whiskey. It is made and sold by the Chattanooga Medicine Company, this company being owned by John A. Patten and Z. C. Patten, Jr. The Chattanooga Medicine Company previous to 1909 was a corporation, largely owned by the two Pattens. In that year the company gave up its charter of incorporation in order to avoid the tax put on corporations at that time.

Fig. 1.—Photographic reproductions (greatly reduced) of the cartons of Wine of Cardui before and after the passage of the Food and Drugs Act. At the left is the old carton with the fraudulent statement "Nature's Great Emmenagogue" and the equally fraudulent statement "A certain cure for menstrual disturbances." Neither of these statements appear on the present carton, but in place of them is the enlightening information "Contains 20 per cent. alcohol."

John A. Patten, who is understood to own the greater part of this "patent medicine" concern, is one of the most prominent laymen in the Methodist Episcopal Church organization. According to the Methodist Year Book for 1914, he holds positions on the following:

Book Committee, chairman.

Freedman's Aid Society, member of the board of laymen.

Board of Education, member of the Board of Managers.

Methodist Brotherhood, representative of General Conference District 6.

Commission on Federation, member.

Executive Committee of Laymen's Associations, member at large.

Methodist Men's Convention, member of Committee on Policy.

By far the most important of these position is his chairmanship of the Book Committee. According to the Methodist Year Book, the Book Committee "is one of the most important bodies created by the General Conference, being almost a General Conference *ad interim*." This committee:

Fixes the salaries of the bishops, publishing agents and all official editors; has general supervision of the publishing interests of the church; may discontinue any depository or periodical; may order expenses curtailed in any department of the Book Concern; elects the book editor; controls the

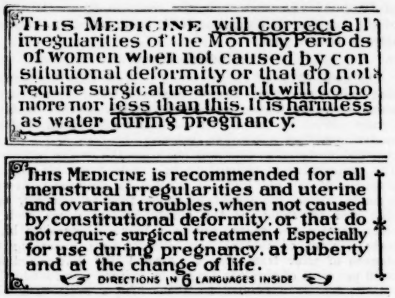

THIS MEDICINE will correct all irregularities of the Monthly Periods of women when not caused by constitutional deformity or that do not require surgical treatment. It will do no more nor less than this. It is harmless as water during pregnancy.
THIS MEDICINE is recommended for all menstrual irregularities and uterine and ovarian troubles, when not caused by constitutional deformity, or that do not require surgical treatment Especially for use during pregnancy, at puberty and at the change of life.
DIRECTIONS IN 6 LANGUAGES INSIDE

Fig. 2.—Photographic reproductions (reduced) of parts of the old (upper) and new (lower) cartons. Notice that the direct falsehoods of the old carton have given place to the inferential falsehoods of the new. Cardui no longer "will correct" all irregularities, but is now "recommended" for these irregularities. The vicious falsehood that Wine of Cardui "is harmless as water" has been deleted.

purchase, sale or exchange of real estate by the Book Concern; may remove from office a publishing agent or editor; declares the amount of the dividend of the Book Concern to be distributed among the conferences.

Before passing to a consideration of the Wine of Cardui itself, it is worth noting that Mr. Patten, as one of the Committee on Policy appointed during the Methodist Men's Convention, reported that the convention committed itself "with heartiness and devotion to the well-known attitude of the church on the subject of temperance. . . ."

CARDUI ADVERTISING

A few years ago the advertising of Wine of Cardui was distinguished by its bold indecency. This, for example, from a two-column advertisement, entitled "Why Women Fear to Grow Old":

"What a husband needs, is a well-SEXED woman—a woman with health, strength, capacity for sharing with him, in a womanly way, life's duties, responsibilities and enjoyments."

"A well-sexed woman wins success, also—in business, literary or social life—where the weak-sexed one fails."

"Are you a victim to any of the many forms of disease peculiar to women, which prevents you from tasting to the full the enjoyment and happiness that is due you?"

Referring to this phase of the Wine of Cardui business, Mr. Samuel Hopkins Adams, in his "Great American Fraud" series, discussing a Cardui advertisement entitled "What Men Like in a Girl," said: "For loathesome and gratuitous indecency, for leering appeal to the basest passions, this advertisement and the others of the Wine of Cardui series sound the depths."

MR. PATTEN DEFENDS THE NOSTRUM BUSINESS

At the time the public was being awakened to the more serious evils of the "patent-medicine" traffic, Mr. Patten, as "fraternal representative from the Proprietary Association of America"—the "patent medicine" organization—spoke before the twentieth annual convention of the Tennessee State Pharmaceutical Association. Mr. Patten defended the "patent medicine" business, and, in common with his kind, protested against the "attacks on the manufacturers of proprietary medicines." Mr. Patten's argument was that self-interest alone on the part of "patent medicine" manufacturers insured meritorious and safe remedies!

"However unscrupulous," said Mr. Patten, referring to the "patent medicine" manufacturer, "he may be at heart, commonsense teaches that only as he produces an article that will 'repeat'—which will meet the needs of the people who buy—can he reach success."

This, from a gentleman who was selling to unsuspecting women an alcoholic "tonic" under the claim that it was non-intoxicating! Wine of Cardui is, doubtless, a good "repeater." So is whiskey.

Mr. Patten's address, defending "patent medicines," although long, was widely copied by the newspapers of the country, and some editors went so far as to discuss the matter editorially. Whether this wide dissemination of pro-nostrum matter was the result of purchased news space by the Proprietary Association for the purpose of molding public opinion through advertisements printed as news-matter, or whether the matter was reprinted because the newspapers, as general beneficiaries of the "patent medicine" industry, recognized the *quid pro quo*, it is impossible to say.

THE WOMAN'S TONIC

Wine of Cardui, according to its manufacturers, is "the woman's tonic." It is apparently recommended for practically all the ills that woman is heir to. Before the Food and Drugs Act made lying expensive, instead of merely immoral, the label of Mr. Patten's product bore such outrageous falsehoods as:

"A certain cure for menstrual disturbances of women, such as irregularity, exaggeration, suppression, etc."

"It is harmless as water during pregnancy."

"Nature's Great Emmenagogue."

"Without intoxicating qualities."

"The most astonishing Tonic for Women known to Medical Science."

No such crude lies as these appear now on the carton or label of Wine of Cardui, for Mr. Patten, in common with many other nostrum exploiters, appreciates the value of truthfulness—when it becomes a legal necessity. To-day,

McELREE'S
WINE OF
CARDUI
OR
WOMAN'S RELIEF
DIRECTIONS.
This pure Wine is a simple vegetable extract, without intoxicating qualities, and has proved to be the most astonishing Tonic for Women known to Medical Science.
It is recommended to cure all irregularities of the menstrual
McELREE'S
WINE OF
CARDUI
OR
WOMAN'S RELIEF
KEEP WELL CORKED
This Medicine is a purely vegetable extract, and has proven to be a reliable Remedy For the Treatment of Female Diseases
It is recommended for all irregularities of the menstrual functions

Fig. 3.—Parts of the old (left) and new (right) labels. As Wine of Cardui is not a "pure wine" and as it is not the "most astonishing tonic for women known to medical science" these statements no longer appear on the label. As the bottle has to confess to the presence of 20 per cent. alcohol, the pillar of the Methodist Episcopal Church who manufactures this stuff dares not now claim that his "booze" is "without intoxicating qualities." But the claim was made before there was a penalty attached to lying!

because the law demands it, Mr. Patten's medicine bears the statement: "Contains 20 per cent. alcohol." Yet in 1905 Mr. Patten, in his widely disseminated address, inveighed against the suggestion made by thinking people that the percentage of alcohol in "patent medicine" should be declared. And this "tonic," containing twice as much alcohol as champagne was

sold under the claim that it was "without intoxicating qualities!"

"I claim," said the representative of the Methodist Brotherhood, "to be a sincere advocate of temperance, but you gentlemen know and I know what a base attempt has been made in this direction to play on the prejudices of the ignorant."

THE ADVERTISERS' CLUB OVER LEGISLATORS

During the summer of 1912, *Collier's* called attention to a letter said to have been sent by the advertising counsel of the Chattanooga Medicine Company to a newspaper in New

Fig. 4.—One of the older Wine of Cardui advertisements, greatly reduced.

Mexico. A bill had been introduced in the state legislature of New Mexico. Its aim was to supplement the federal Food and Drugs Act by prohibiting curative claims. According to *Collier's* the letter from the Wine of Cardui concern gave the name of the man introducing the bill with the name of the committee that was to pass on it. Then, in red letters, was this clause:

"This will, of course, stop all advertising of proprietary medicines in New Mexico."

The advertising counsel then asked: "Won't you please take this important matter up at once with your representative?" As *Collier's* said at the time, this piece of correspondence sounded like old times—"the combination between the patent medicine company with its millions to spend on advertising; the newspaper which wants the advertising and the legislator who wants the support of the newspaper."

PRESENT CLAIMS FOR CARDUI

What is claimed for Wine of Cardui to-day? In the booklet sent out by the Chattanooga Medicine Company—but not with the bottle, so that its statements are not subject to the federal Food and Drugs Act—we read:

"This is a pure, vegetable, curative, female tonic. It regulates fitful functions, relieves periodical pain, strengthens the female organs and builds up the female constitution."

And what will this marvelous nostrum not do? Should the breasts exhibit "lack of tone, shown by hanging breasts"—"it is time to take Cardui." In local diseases of the vulva, "frequently caused by want of cleanliness," but even when "caused by gonorrheal infection" "Cardui will exert marked beneficial effect upon this local irritation." "Nine out of every ten female invalids" according to the booklet, "have womb trouble," and Wine of Cardui, we are asked to believe, has "cured" the wombs of "over a million women" and "made them feel well all through." Should the womb be anteflexed, take Wine of Cardui; should it be retroflexed, also take Wine of Cardui; should there be prolapse or inversion, take Wine of Cardui. Have you suppressed menstruation or "flooding"—Cardui will cure it. The girl at puberty "needs care, patient attention, motherly advice and—Cardui."

"Every girl should take Cardui at the time of puberty. It can never do her anything but good." Does the Chairman of the Book Committee of the Methodist Episcopal Church, who is such a strong advocate of temperance, really believe his disguised "booze" is a good thing to give a young girl at the most impressionable period of her life? Does Mr. Patten really think that an alcoholic nostrum—far more insidiously dangerous than the ordinary form of alcoholic drink—is something that, given to the girl blossoming into womanhood, "can never do her anything but good"?

And to the married woman, Mr. Patten gives this advice:

"All newly married women should take Cardui. It will afford them a gentle, sustaining refreshment, soothe their nerves, tone up their organs and regulate all their functions."

The question has frequently been asked: "What is Wine of Cardui?" To answer it, the chemists of the laboratory of the American Medical Association were asked to analyze it. Here is their report:

CHEMIST'S REPORT

The name Wine of Cardui would indicate that the preparation was made from blessed cardus (*Cnicus benedictus*) a plant variously known as blessed, cursed, spotted or bitter thistle. Wine of Cardui is a dark brownish liquid having a neutral reaction, a peculiar, valerian-like odor and a bitter, mawkish taste. The odor was not wine-like in any particular. The preparation is claimed to be purely vegetable and the presence of 20 per cent. of alcohol is declared. Arsenic, bromids, iodids, the potent alkaloids such as aconitin, morphin and strychnin, or the emodin-bearing drugs such as aloes, cascara and senna, were not found. Potassium bitartrate (cream of tartar) was absent, thus indicating the absence of wine from grapes. Alcohol was determined and 20.36 per cent. of absolute alcohol by volume was found. The volatile matter amounted to about 97 per cent. The nonvolatile residue appeared to consist of vegetable extractives. This had a bitter taste and gave very faint reactions for alkaloids. The quantity of alkaloid was too small to possess any appreciable medicinal effect, whatever its potency might be. Small quantities of a nitrate were present. Potassium nitrate is a constituent of a considerable number of plants, among which is blessed thistle. The presence of traces of this salt in Wine of Cardui does not, therefore, prove the presence of blessed thistle extractives in this preparation, although it is confirmatory evidence. A trace of combined ammonia also was present.

It is probable that Wine of Cardui is a weak, hydroalcoholic extract of blessed thistle, containing a trace of valerian. Blessed thistle has been employed to some extent

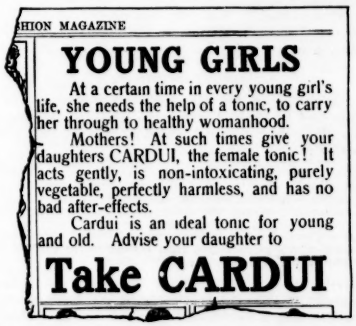

HION MAGAZINE
YOUNG GIRLS
At a certain time in every young girl's life, she needs the help of a tonic, to carry her through to healthy womanhood.
Mothers! At such times give your daughters CARDUI, the female tonic! It acts gently, is non-intoxicating, purely vegetable, perfectly harmless, and has no bad after-effects.
Cardui is an ideal tonic for young and old. Advise your daughter to
Take CARDUI

Fig. 5.—One of Mr. Patten's advertisements to young girls in which he declares his "booze" is "non-intoxicating" and "perfectly harmless."

in domestic medicine as a simple bitter, but little attention is given to it by discriminating writers in materia medica. It seems probable that whatever medicinal effect Wine of Cardui may possess, is due principally to its alcohol content."

The chemist's report can briefly be summed up in the statement that Wine of Cardui is a "patent medicine" that contains 20 per cent. of alcohol and apparently very little else. In view of the chemist's findings, it would be interesting to know why the Commissioner of Internal Revenue has not

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listed Wine of Cardui among those alleged medicinal preparations that are "insufficiently medicated to render them unsuitable for use as a beverage," and thereby limited the selling of this preparation to those who have paid the retail liquor dealers' special tax!

Summed up, Wine of Cardui may be said to belong to what is known as the "bracer" class of nostrums—those that are taken largely for their alcoholic effect. There are few more insidiously dangerous "patent medicines" than those belonging to this class. By what sophistries does Mr. Patten, pillar of the Methodist Episcopal Church, square his religious principles with his business? The thousands of Methodists who are opposed, alike, both to the fraud in the "patent medicine" business itself, and also to the sale of alcoholics under the guise of women's tonics, have a right to demand of their organization an explanation of Mr. Patten's preferment. What is the secret of this man's power in their church? Is the Methodist Episcopal Church in need of tainted dollars fraudulently obtained from sickly women who innocently purchase a disguised tipple? So far as we know, not one of the official publications of the Methodist Episcopal Church will carry the advertisements of Wine of Cardui—the business is too dirty, too vicious, too fraudulent for their pages. Why then, does that church bestow on a man who makes his money through such a business, some of its highest honors and dignities?

Association News

PRELIMINARY ANNOUNCEMENT OF RAILROAD RATES FOR THE ATLANTIC CITY SESSION

The Committee on Transportation and Place of Session announces the rates of which it has been advised to date:

The Trunk Line Association has authorized a rate of 2 cents a mile in each direction with a minimum of $1 for the round trip, going and returning via same route only; tickets to be sold and good, going, June 20 to 22, and returning to reach the original starting-point not later than June 29.

The Western Passenger Association calls attention to the very favorable tourist fares to Atlantic City which will be available to persons desiring to attend the annual session. The general basis of these fares is 2 cents a mile in each direction up to the eastern gateway added to the fares tendered therefrom. These fares are on as liberal a basis as are made by the lines of the Western Passenger Association.

The Grand Trunk Railway System announces that it will have on sale June 1 daily up to and including September 30, round-trip, thirty-day excursion tickets to Atlantic City, also sixty-day circle tour tickets going via New York, returning via Philadelphia, Baltimore and Washington at the following rates:

Chicago to Atlantic City and return, $29.10, thirty-day limit.

Chicago to New York, returning via Philadelphia, Baltimore and Washington, $32.40, sixty-day limit.

On the thirty-day tickets, liberal stop-overs are allowed in the United States and all intermediate points in Canada. On the sixty-day tourist tickets, stop-overs are allowed at all intermediate points en route.

The Grand Trunk Railway System operates three solid vestibule trains leaving Chicago daily at 11:05 a. m., 3:30 p. m. and 11:05 p. m., carrying steel underframe coaches, steel Pullmans and dining-cars, electric lighted throughout. It will also have many other interesting summer trips on sale beginning June 1, including circle tours going one way and returning another.

This preliminary notice of fares is of necessity incomplete. Additional rates will be published as they are announced by the several passenger associations. Fellows contemplating attending the annual session should consult the local ticket agent in their home towns for full information regarding rates, time limits, extension and stop-over privileges. In subsequent reports, special trains which may be arranged for from various points will be noted.

HOTELS ANNOUNCED AS HEADQUARTERS

The local Committee on Arrangements for the Atlantic City Session report the following hotels as headquarters:

General Headquarters	Marlborough-Blenheim
Practice of Medicine	Hotel Dennis
Surgery	Hotel Chalfonte
Obstetrics, Gynecology and Abdominal Surgery	Haddon Hall
Ophthalmology	Hotel Traymore
Laryngology, Otology and Rhinology	Hotel Brighton
Diseases of Children	Seaside House
Pharmacology and Therapeutics	Hotel Dennis
Pathology and Physiology	Shelburne
Stomatology	Alamac
Nervous and Mental Diseases	Hotel Brighton
Dermatology	Seaside House
Preventive Medicine and Public Health	Shelburne
Genito-Urinary Diseases	Alamac
Hospitals	Marlborough-Blenheim
Orthopedic Surgery	Hotel Chalfonte

Correspondence

Painless Parturition

To the Editor:—In the whole realm of science no other field presents such a crying need for the use of the modern anesthetic as that of parturition. For this class of suffering nitrous oxid is particularly well adapted. The subconscious and unconscious states rapidly follow its inhalation; likewise consciousness returns quickly after its inhalation is discontinued. This permits of its entire discontinuance between "pains" with the patient completely conscious, and its administration only just prior to and during the contractions. Furthermore, and this is a very important difference from the action of ether and chloroform, used in this manner, nitrous oxid does not interfere with the contractions of the uterus; the progress of labor is natural, yet the "pains" are painless.

The pain and suffering of the parturient woman produce exhaustion, that is, shock. Nitrous oxid, in a very large measure and to a much greater extent than the usual anesthetics, protects against shock, so that, with its use, not only is the suffering prevented, but also the physical condition of the patient is decidedly better. With the patient's vitality conserved, the contractions of the uterus are stronger and, therefore, nitrous oxid aids and facilitates the progress of labor.

The parturient and puerperal patient is particularly prone to pathologic processes, as resistance is low. Nitrous oxid conserves the patient's resistance in general (Crile: The Results of Operations, Especially Abdominal, Performed on the Principle of Anoci-Association, THE JOURNAL, July 13, 1912, p. 114), and against infection specifically (Crile: An Experimental and Clinical Research into Nitrous Oxid versus Ether Anesthesia, *South. Med. Jour.*, January, 1910). Besides, in such patients, the disintoxicating and eliminating organs—the thyroid, parathyroids, adrenals, liver and kidneys—are already overtaxed. Nitrous oxid, therefore, is the rational and scientific anesthetic for the obstetrician (Coburn: The Selection of the Anesthetic on the Basis of its Ultimate Physiology, *Surg., Gynec. and Obst.*, December, 1913). With its use, not only is parturition painless, but the patient's vitality and resistance are thereby conserved, and much of the onerous burden and danger removed from the parturient chamber.

RAYMOND C. COBURN, M.D., New York.

Hasty Publication.—William Harvey had demonstrated his ideas of the circulation for twelve years before publishing them; between the first draft and final publication of the "Origin of Species," seventeen years were allowed to pass; yet to-day men *rush* into print with ideas that are pigmy-like compared with these magnificent conceptions.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VARIATIONS IN DIFFERENT BRANDS OF ETHER

To the Editor:—1. An anesthetist finds that a certain brand of ether seems to require very much more to produce anesthesia than a brand previously used. What possible difference in two brands of ether may account for this?

2. What chemical differences are to be expected in the standard brands of ether now on the market? W. E. C.

ANSWER.—1. The anesthetic strength of ether might be influenced by the presence of water or alcohol. It is unlikely that any ether sold for anesthetic purposes contains enough of either of these impurities to affect materially its anesthetic activity. The Pharmacopeia gives directions for detecting an undue amount of alcohol or water which can be easily applied. It is probable that any differences in effect observed are due to the mode of administration.

2. There is no reason to expect more than minute differences in the chemical composition of the standard brands of ether on the market. Depending on the method of preparation various impurities may be present, but these are usually removed, so that the standard brands are of good quality.

BOOKS ON FIRST AID

To the Editor:—I have been asked to name some book suitable for laymen, covering the ordinary emergency and first-aid subjects. Can you tell me of such a one?

C. T. CADWELL, M.D., Poughkeepsie, N. Y.

ANSWER.—The following is a list of references to recent publications on this subject:

Lynch, Charles: American Red Cross Abridged Text-Book on First Aid, Woman's Edition, Railroad Edition, Miner's Edition and Police and Fireman's Edition, Philadelphia, P. Blakiston's Son & Co., 1913, each 30 cents.

Doty, Alvah, H.: A Manual of Instruction in the Principles of Prompt Aid to the Injured, Including a Chapter on Hygiene and Disinfection. Designed for Civil and Military Use, Edition 5, Cloth. Pp. 229, with 85 illustrations. New York, D. Appleton & Co., 1912, $1.50.

Warwick, F. J.: First Aid to the Injured, New York, W. R. Jenkins Company, $1.

KINTZING TREATMENT OF TETANUS

To the Editor:—What results have been obtained with Kintzing's prescription for tetanus which is, I understand, intramuscular injection of a solution of pure phenol? It was supposed to have been successfully tried out in nine cases at the Franklin Square Hospital in Baltimore during the past year or two.

F. A. WOODWARD, M.D., Los Angeles.

ANSWER.—No reports on the method of Kintzing have appeared in current medical literature since Kintzing's original article, reporting seven cases with recovery (Kintzing, P.: Tetanus: Seven Cases with Recovery, *New York Med. Jour.*, Dec. 23, 1911; abstr., THE JOURNAL, Jan. 6, 1912, p. 64). Foreign literature has contained favorable accounts of Baccelli's treatment, which is essentially the same.

PERCENTAGE AND EXTRACTION OF NICOTIN

To the Editor:—In the note on the sterilization of tobacco (THE JOURNAL, Feb. 26, 1914, p. 717), I find the statement that tobacco may contain from 0.6 to 9 per cent. nicotin. Please give the best authority as to the percentage of nicotin, and state how it may be extracted. M. M. MARTINSON, M.D., Chattanooga, Tenn.

ANSWER.—Owing to the variety of tobacco, climate, seasonal variation, method of curing, moisture content and other factors, the quantity of nicotin in dried tobacco-leaf varies greatly. Experiments by the French department of agriculture (*Compt. rend. Acad. d. sc.*, cli, 23) have shown that the extreme ranges of nicotin content for various tobaccos lay between 0.22 and 10.5 per cent. The *Lancet* laboratory found that the nicotin content of commercial smoking- and chewing-tobaccos lay between 0.6 and 5.3 per cent., based on the dried leaf.

A number of methods have been proposed for the estimation of nicotin in tobacco. One of the most satisfactory is the following:

From 5 to 6 gm. of tobacco in small pieces are weighed and placed in the flask of a reflux apparatus together with 10 gm. of lead oxid and 100 c.c. of benzene. The flask is immersed in a gently boiling water-bath for one hour. The mixture is cooled and the solvent decanted. The residue is washed several times with small quantities of benzene. The bulked solvent is extracted several times with diluted sulphuric acid in a separator. The acid solutions are bulked and an excess of iodin solution added. After precipitation is complete, the mixture is filtered, the precipitate washed with cold water and suspended in acetone and the iodin determined by titration with tenth-normal sodium thiosulphate.

1 c.c. N/10 $Na_2S_2O_3 = 0.002$ gm. nicotin.

Nicotin may be extracted from tobacco in an impure form by distilling in steam from an alkaline solution and drawing off the nicotin layer from the distillate by means of a separator. The alkaloid may be obtained in greater purity by collecting the distillate in diluted acid, precipitating with iodin, decomposing the precipitate with sodium sulphite and drawing off the nicotin layer by means of a separator.

DIMETHYLAMINOBENZALDEHYD REACTION

To the Editor:—Please give me the method of detection of urobilinogen in the urine by means of dimethylaminobenzaldehyd.

F. H. NEUHAUS, M.D., Houston, Tex.

ANSWER.—Prepare a 2 per cent. solution of p-dimethylaminobenzaldehyd in equal parts of concentrated hydrochloric acid and water. Add a few drops of this solution to 5 c.c. of fresh cold urine and allow to stand for a few minutes. A positive reaction is indicated by the appearance of a cherry-red color, which may be extracted with chloroform or epichlorhydrin. Heating facilitates the reaction, but here normal urine may give a slight reddish coloration. In the cold, normal urine gives a greenish-yellow color.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

NEWSPAPER COMMENTS ON PHYSICIANS

Probably at no time have the activities and efforts of physicians been as freely and widely discussed in the public press as at present. This is both an encouragement and a warning. It is encouraging as showing the increasing recognition of public health as a social problem. It is a warning to the medical profession that our activities and motives in the future will be subject to much more rigid scrutiny than in the past. Both the individual and the organization can profitably consider the criticisms which are brought against it. As the social activities of the medical profession increase, the need of correcting our professional ideas in the light of criticisms from a popular view-point will become more apparent. It is also true that if the public must be educated into scientific and professional ways of thinking the profession must also be educated into social methods of thought.

MEDICAL CONTROL OF MEDICAL PRACTICE

One of the most elaborate criticisms of the medical profession, appeared recently in the Los Angeles Sunday *Examiner*, in the form of a full page editorial, headed by a large cartoon representing Uncle Sam in the clutches of the "three pigmies that rule a giant." The heading of the editorial reads, "One of our nation's big troubles is lawyers, doctors, bankers. We permit these gentlemen to make the rules that govern themselves and govern the whole country." Discussing this proposition, the editor states that this country is governed by doctors, lawyers and bankers. Lawyers make the laws, bankers handle the money, while "we permit doctors to have everything to say about the doctor's business, the hospitals, the public health, and other important matters. We don't permit automobile drivers or automobile manufacturers to control or write the rules of the road. The doctors make their own laws and rule too much for the public good. No matter how wise they may be, or how unselfish, they must

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permit the assumption that all of the people are wiser than they are." The editor admits that doctors are painstaking, thorough, scientific and unselfish men. The best of them give their discoveries to the public free, whereas other inventors and discoverers take for themselves the protection and profit that the patent office gives. It would be a sad thing indeed if confidence in good doctors were destroyed, but it is wrong, harmful to the public and harmful to the doctors that the latter, like the lawyers, should rule absolutely their own class. People should see to it that the medical profession is managed very largely not for the curing of disease for pay but to prevent disease. This, condensed from a couple of columns of discussion, is the opinion of the editor, illustrated by specific instances of incompetent and mercenary physicians.

The *Examiner* is perfectly correct in its abstract principles, but mistaken in its facts. The fact is that the only laws for the restriction and regulation of physicians that have been passed in this country have been passed at the insistence of the better half of the medical profession. The fact that there are incompetent and mercenary physicians (which is, of course, true) is a matter for which the public is directly responsible. Poor laws and inefficient enforcement of these laws have produced the low grade, commercial and mercenary medical school which, in turn, has turned out the half trained mercenary physician with low ideals. If the public will establish a high standard for the practice of medicine, and will enforce it on all alike, the medical profession would be delighted to turn this responsibility over to the people. The attitude of the average citizen and especially of the majority of members of legislatures, however, is that all sects, cults and classes, no matter how ignorant their followers or absurd their claims, should be given the same rights and recognition as scientifically educated and competent physicians. Having put up bars in the form of standards which the competent and conscientious student must spend years of study and thousands of dollars to pass in order to gain entrance to his profession, public carelessness and loose legislation then proceed to open the back door and admit to the same privileges, ignorant, untrained and fanatical followers of fads, under the plea of "personal liberty." The position of the medical profession on this subject is that it is willing to be bound by any restrictions or qualifications which public opinion will place on it, but asks that the same standard be applied to all who seek the same privilege. This is not being done in a single state. The fact that there are any standards at all is due solely to the efforts of the medical profession. If the public will relieve us of the responsibility of establishing standards and will apply a high standard with perfect equity to all concerned, the condition of the public and profession will be greatly benefited.

HUMANITARIANISM OF MEDICINE

The Helena, Montana, *Independent*, commenting on the fact that an eminent physician, recognized as an authority in his field, died recently leaving an estate of only $5,000, says:

"These facts emphasize the humanitarian side of the medical profession. The physician is always the butt of jibes and in many cases, the object of suspicion, yet there is no profession or calling that is more unselfish. Does a physician discover a new antidote, a new antitoxin, a new anesthetic? He gives it to the world. He considers it his duty. It is the ethics, the unwritten law of his profession. He would be disgraced in the eyes of his fellow practitioners should he attempt to exploit his discovery for his own benefit. The greatest discoveries of mankind have been made by physicians, and they have been given to the world for nothing, while some of those who made the research paid for their work with their lives, and still others died in poverty. The world never overpays its benefactors; it will always remain in their debt."

PERSONAL ADVERTISING VS. COOPERATIVE PUBLICITY

The New York *Commercial*, discussing the act of the Medical Society of the County of New York regarding newspaper interviews and professional men, says: "Medical societies which have fulminated against all forms of publicity and advertising by physicians and surgeons have never yet been able to give any logical reason for their objections. The plain truth of the matter is that a few of the older men of the profession are able to maintain the advantages they have already won by keeping the younger members in the background."

The *Commercial*, in common with most of the newspapers discussing this question, confuses individual advertising with cooperative publicity. For a medical organization, through its proper officers, to supply suitable information to the newspapers regarding disease in general and its prevention, is not only entirely legitimate but is not contrary to the ethics of the medical profession and never has been. For an individual physician, however, to advertise his personal qualifications directly to the public or to use the numerous subterfuges adopted by those lacking the courage to advertise openly has always been regarded as an unprofessional and unworthy act and always will be. There is great need of clear thinking on this subject, not only by the newspapers and the public, but by physicians as well.

"THE WRONG PRESCRIPTION"

Discussing the suggestion that the physicians of Pennsylvania should appoint a legislative agent or prominent committee for lobbying at the state legislature, the Philadelphia *Bulletin* says, "Doctors would do better to get in closer touch with public sentiment and to cultivate an intelligent public opinion. A lobby at Harrisburg is not the right prescription for the emergency which threatens." The *Bulletin* recognizes the fact that protestations of disinterestedness and unselfishness on the part of the medical profession do not harmonize with the use of political methods in securing desired legislation. If the legislation asked for is for the public good, then certainly it ought not to be difficult to convince the public of this fact. If the public cannot be convinced, it should not be forced to protect itself by the enactment of laws through wire pulling, log rolling, political lobbying methods which have of late years been all too frequent in our legislative halls. Public education, and not political activity, is the proper function of medical organizations.

MEDICAL TRADES-UNIONISM

Under the title "Are We to Have a Doctors' Union Presently?" the New Orleans *State Journal* informs us that the very radical members of the profession are anxious to form a regular physicians' union with a set of by-laws and regulations that will bind them as strongly as the labor unions. According to the *Journal*, there hasn't been much talk of forming unions in this country yet, although, continues the editor, "it has been alleged time and again that the American Medical Association is little more than a union." It is a question, in the mind of the discriminating and informed reader, whether the editor means a little more or a little less. However, he admits that the Association "has done a great deal for physicians and incidentally a very great deal for the general public; that it has been at the forefront of the fight against the manufacture of food poisons and the adulteration of drugs as well as the fake patent medicine fights." "But," concludes the editor, and he feels that this is of sufficient importance to put it in capitals, "IT ALSO RULES THE MEDICAL PROFESSION WITH AN IRON HAND." As the Association membership constitutes a large majority of the medical profession, it must be apparent that the profession rules itself with an iron hand, in which case the fears of the Los Angeles *Examiner* quoted above may be somewhat appeased.

STATE COMPENSATION FOR PHYSICIANS

The Boston *Globe* discusses the question of whether physicians should be paid by the state, taking its text from Bernard Shaw's topsyturvy arguments, which have evidently convinced the editor to the point of causing him to wonder if there are any honest doctors at all, in view of the fact that physicians derive their income from the ill health and misfortunes of their fellow men. We should perhaps be satisfied with this faint praise, especially as the *Globe* feels that much credit is due us because we can "oftentimes fight the powerful influences which are constantly trying to drag them (physi-

cians) down." The *Globe* rightly feels that anyone that can release mankind from inefficient and dishonest doctors would be doing a great public service, but its acceptance of Shaw's solution, that the state put a premium on good health rather than on illness, does not argue well for the editor's profound knowledge of present public health discussions. This idea, like most of Shaw's opinions, is not original but very much second hand. When Shaw asks, "Why are not public doctors paid by the state?" he asks what physicians have been asking with increasing emphasis for the last forty years. The answer is evident: because the general public is not as yet intelligent enough to demand protection from disease rather than treatment after disease is acquired, nor far sighted enough to pay a reasonable price for such protection. The *Globe* is perfectly right when it concludes "We should pay doctors to keep us well and not make them dependent on the prevalence of disease." The obstacles in the way of this desired consummation are to be found in public ignorance and indifference, and not in professional greed.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, May 12. Sec., Dr. W. S. Stewart, Suite 404 Citizens Bk. Bldg., Pine Bluff. Homeopathic: Little Rock, May 12. Sec., Dr. I. J. Brooks, 219 East 10th St., Little Rock. Eclectic: Little Rock, May 12. Sec., Dr. C. E. Laws, Ft. Smith.

CANADA: Alberta, April 24. Dr. Cecil E. Race, Registrar of the University of Alberta, Edmonton.

ILLINOIS: Coliseum Annex, Chicago, May 12-14. Sec., Mr. Amos Sawyer, Springfield.

LOUISIANA: New Orleans, May 4. Homeopathic Board, Sec., Dr. Edward Harper, 702 Macheca Bldg., New Orleans.

NEVADA: Carson City, May 4. Sec., Dr. Simeon L. Lee, Carson.

NEW MEXICO: Santa Fe, April 13. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: May 19-22. Chief of Examinations Division, Mr. Harlan H. Horner, Department of Education, Albany.

OKLAHOMA: Oklahoma City, April 14. Sec., Dr. John W. Duke, Guthrie.

TENNESSEE: Memphis, Nashville and Knoxville, first week in May. Sec., Dr. A. B. DeLoach, Memphis.

WEST VIRGINIA: Charleston, April 21. Sec., Dr. S. L. Jepson, 81-12th St., Wheeling.

Washington January Report

Dr. Conrad N. Suttner, secretary of the Washington State Board of Medical Examiners, reports the written examination held at Spokane, Jan. 6-12, 1914. The number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 39, including 1 osteopath, of whom 38, including 1 osteopath, passed, and 1 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
University of Colorado	(1913)	75.9
Chicago College of Med. and Surg.	(1909)	75.3
Northwestern University	(1910) 77.3 (1911)	82.8
University of Illinois	(1912) 91.6; (1913)	90
Iowa College of Physicians and Surgeons	(1900)	78.3
Baltimore Medical College	(1900)	81.9
Johns Hopkins University	(1911)	88.7
Harvard Medical School	(1892) 90.1; (1911)	86.4
Tufts College Medical School	(1911)	80.7
University of Mich., Dept. of M. & S.	(1890) 79.8; (1909)	86.4
Minneapolis College of Physicians and Surgeons	(1908)	89
Barnes Medical College	(1907)	77.7
Missouri Medical College	(1895)	81
University Med. Coll., Kansas City	(1909) 77.3; (1908)	85.3
Washington University, St. Louis	(1909)	83.3
University and Bellevue Hosp. Med. Coll.	(1906)	94.3
University of Oregon	(1905) 81.9; (1910) 97; (1911) 84.5; (1913) 79.7, 86.8, 87.1.	
Willamette University	(1913)	85.9
Jefferson Medical College	(1913)	82.7
University of Pennsylvania	(1907) 85.6; (1913)	93.7
University of Pittsburgh	(1911)	78.7
University of Nashville	(1902)	77.5
Marquette University	(1912)	80.3
Trinity Medical College, Toronto	(1880)	77.8
University of Toronto, Faculty of Medicine	(1909)	76.7
University of Berlin	(1904)	91.4
FAILED		
University of Tennessee	(1912)	*

*No grade given.

Book Notices

ACUTE ABDOMINAL DISEASES, INCLUDING ABDOMINAL INJURIES AND THE COMPLICATIONS OF EXTERNAL HERNIA. By Joseph E. Adams, M.B., M.S., F.R.C.S., Senior Assistant Surgeon, East London Hospital for Children, and Maurice A. Cassidy, M.A., M.D., B.C., Physician with Charge of Outpatients, St. Thomas Hospital. Cloth. Price $4.50 net. Pp. 571, with 28 illustrations. New York: William Wood & Co., 1913.

In this small volume the authors have attempted to cover a rather wide range of subjects from the anatomy and diseases of the abdomen to diseases which may simulate acute abdominal lesions; hence some of the matter is quite elementary in character. The description of the location of the stomach seems to have been based on findings of the dissecting-room rather than on the findings of modern Roentgen examinations. The English method of operating on patients in their homes rather than in hospitals is advised, and chloroform is given as the anesthetic of choice, notwithstanding the fact that it has yielded to the safer ether and other methods in almost all other countries. One point of considerable importance is well brought out in connection with the etiology of obstruction of the bowel. A careful analysis of 500 cases of obstruction admitted to St. Thomas' Hospital in which a correct anatomic diagnosis was made, either at operation or at necropsy, showed not a single case due to fecal impaction. This fact cannot be too forcefully emphasized, for the practice is still altogether too common for physicians to look on fecal impaction as a very frequent cause of intestinal obstruction, and to work over the patient with physics and enemas until the favorable time for successful operation is passed. In the chapter on diseases which may simulate acute abdominal lesion, a number of interesting conditions are mentioned which have given rise to erroneous diagnoses and at times to the performance of a laparotomy, in the belief that an acute abdominal emergency existed. There are few illustrations. The character of the work is along practical rather than scientific lines.

EARLY PULMONARY TUBERCULOSIS: DIAGNOSIS, PROGNOSIS AND TREATMENT. By John B. Hawes, 2d, M.D., Director Tuberculin Department, Massachusetts General Hospital. Preface by Richard C. Cabot, M.D., Assistant Professor of Medicine, Harvard University. Cloth. Price, $1.50 net. Pp. 114, with illustrations. New York: William Wood & Co., 1913.

The author states that his aim has been to produce a "short, cheap book which presents the essential points in the diagnosis, treatment and prognosis of early pulmonary tuberculosis. The book is intended for the general practitioner." Without discussion of questions of etiology or pathology, and without going into minutiae as to diagnostic details or confusing complications, he has stated briefly the essentials of diagnosis, prognosis and treatment, emphasizing the importance of the early diagnosis and calling attention to the many sources of error that so often lead to the overlooking of the disease in its stage of curability. The desire for brevity at times forces him to make dogmatic statements with which one might be inclined to disagree, and we are inclined to think that the effort—perhaps unconscious—to be epigrammatic has occasionally enticed him into an assertion that while forceful is too sweeping, and really demands modification. The chapter summaries are good. So also is the advice about leaving the interpretation of a roentgenogram of the chest to an expert. The appendix, showing by descriptive text and by figure how patients may arrange to sleep outdoors, is of extreme value to the general practitioner who plans to treat his patient at home. Dr. Richard Cabot in an appreciative introductory note speaks of this book as "small yet authoritative." This is a just characterization and in accordance with it the book is to be commended.

TIERISCHE IMMUNITÄT. Von Dr. Werner Rosenthal. Paper. Price, 6.50 marks. Pp. 329. Braunschweig: Friedrich Vieweg & Sohn, 1914.

This is a clear presentation along conventional lines of the principal phases of immunology in language that is understood by workers in other branches of science. The author has paid very little attention to American work.

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Medicolegal

License Tax on Cows and Herd Inspection Upheld

(City of Asheville vs. Nettles (N. C.), 80 S. E. R. 236)

The Supreme Court of North Carolina upholds a license tax assessed at the rate of $1 per head on each cow in a dairy herd. The court says that there was nothing in the record in this case which would authorize it to hold as a matter of law that such a tax is an unreasonable one. The city is authorized by its charter to prescribe regulations in regard to the sale of milk, in order to safeguard the health of its citizens, and is to be commended for the care which it has shown in so doing. It is also authorized by its charter to levy a license tax to provide for the necessary expenditure in making the inspections and enforcing its regulations.

If the costs of the inspections and of supervision are extravagant, the parties interested should make complaint to the city authorities, and, if not corrected, they can, on proper proceedings, have the fact determined in an action for that purpose, and the court will make appropriate orders to correct the evil. If such defense could be set up for the nonpayment of a license fee which is required to be paid in advance, it might seriously interfere with the execution of the regulations of the board of health.

The defendant, on the facts agreed, was engaged in selling milk in the city of Asheville in contemplation of its charter and ordinances. He sold and delivered milk, it was true, to only one customer, a creamery. But this required the same inspection and regulation of the defendant's herd and of its milk as if he had sold to numerous customers. The court finds nothing in the statute which restricts the inspection of such dairy herds and milk to those located within the corporate limits. Probably all the herds are, like this, outside of but near the corporate limits. Where milk is shipped in from other states or distant points, of necessity the inspection is restricted to the milk when put on sale, but not so when the dairy is located in the same county and in the suburbs or near to the city to which the milk is sent. The object of the law is to give the board of health supervision of the sources of milk-supply, its production and sale, so far as is practicable, in order to protect the lives and health of its citizens.

Not Entitled to License to Practice Medicine—Construction of Resolution

(Board of Medical Examiners of Oklahoma vs. Gulley (Okla.), 136 Pac. R. 1083)

The Supreme Court of Oklahoma holds that, under the provision of the constitution of that state that "All physicians, . . . now legally registered and practicing in Oklahoma and Indian Territory shall be eligible to registration in the state of Oklahoma without examination or cost." A physician who had been practicing medicine in Oklahoma territory under a territorial license is not entitled, as a matter of right, to registration since statehood without examination, when it is shown that Sept. 12, 1907, the territorial supreme court had affirmed the decision of the district court canceling and annulling the territorial license under which the physician in this case had been practicing, on the grounds of fraud and deceit in procuring it.

Some right was claimed under the concurrent resolution of the legislature, approved April 2, 1908, which reads: "Whereas, it is claimed that by mistake or otherwise, injustice has been done physicians of certain school or schools of medicine, in the administration of the territorial laws governing the admission of such physicians to practice their profession, as well as in the attempt to cancel the license of those previously admitted to practice; Therefore be it resolved by the House of Representatives, the Senate concurring therein, that the State Board of Health or medical examiners be, and is hereby empowered, authorized and directed to correct any such mistake or mistakes and right any injustices that may have been done any applicant of any school of medicine for admission to practice, and restore to practice any one who, by mistake or otherwise, has been deprived of the right to practice his or her profession, without further cost or examination; that all physicians who have been granted licenses previous to statehood, regardless of school or schools, shall be placed on equal footing with the graduates of the same school, who have been granted license by the State Board of Health or medical examiners."

The court does not deem it necessary to discuss or determine what legal effect the preceding resolution has, for, whether it has the force of law or be merely advisory as expressing the legislative sentiment, it is not believed that it contains anything that can be said to confer on the plaintiff the legal right to registration. It might at first glance be argued that it affords a basis of support to the charge that other graduates of his college had been admitted, and therefore that he had, because of such fact, acquired the right of admission. But this result does not follow. The view the court takes of the resolution is that, where "school of medicine" is mentioned, it refers, not to a particular college or university in which medicine is taught, but to one of the great theories of medicine, such as allopathy, homeopathy, eclectic, etc.

If it were the claim that an injustice had been done the plaintiff in the supreme court decision mentioned, so as to found a claim thereon that he came under the resolution, the facts showing the injustice would have to appear, and then the board would have to determine whether or not the contention were true, if, indeed, the decision of the territorial supreme court could be set aside in such a way. While the board is administrative and executive, and does not exercise judicial functions, yet it has a discretion that it may exercise in the performance of many of its duties.

Damages for Injury to Person in Weakened Condition and Refusing Operation

(Maroney vs. Minneapolis & St. Louis Railway Co. (Minn.), 144 N. W. R. 149)

The Supreme Court of Minnesota says that the plaintiff was a passenger on one of the defendant's trains, which was derailed. She testified that she was unconscious of any ailment before the accident, and that afterward she suffered pain and was partly incapacitated. It appeared that she had an internal ailment, which could not have been wholly caused by the accident. There was opinion evidence tending to show that a weakened condition, which had shown no symptoms and of which she had not been conscious, was aggravated by the accident to such an extent as to develop the disability and the painful symptoms she described. If such were the case, she might recover damages. The evidence was sufficient to sustain a verdict for her on that theory, and one for $1,900 is approved.

It was urged that the plaintiff could be made whole by an operation, which would cost about $200, and that there was nothing on the record which justified the jury in fixing the damage at nine and one-half times that amount. But the court does not think that the evidence of the cost of a surgical operation had any tendency to measure the plaintiff's damage. Whether she should submit to a major surgical operation for an internal malady was a question for her alone to determine. Such operations involve a known risk which she alone must bear. The defendant was in no position to complain that the plaintiff had seen fit to suffer from her ailment rather than to submit to such an operation. Neither could the court or jury pass on the wisdom of her choice. The chances of the operating-table, in such a case, are too grave to require of the plaintiff that she take this course to lessen her damage, or to permit any consideration of such a prospect as a means of determining what damage she had sustained.

Responsibility.—City authorities are justly chargeable with the lives of all who die of preventable diseases within their jurisdiction, and they should be made responsible before the courts of justice.—Dr. Benjamin Rush.

Miscellany

Competitive Athletics and Mental Development

The effect of competitive athletics on health and efficiency of the individual in after-life has previously been commented on (THE JOURNAL, Jan. 6, 1912, p. 40; March 9, 1912, p. 703; Jan. 25, 1913, pp. 131, 300; Feb. 8, 1913, p. 446), particularly in connection with the reports of the Surgeon-General of the Navy, whose findings are averse to this form of athletics. His conclusions were formulated after a study of the records of athletes and non-athletes in the Navy. A committee of the State Medical Society of California conducted a similar inquiry two years ago, devoting themselves chiefly to the ultimate physical effects. H. D'Arcy Power, a member of that committee, made a study of the mental side of the question, and in a subreport and as the result of further independent inquiry as to the effect of this form of athletics on scholarship and life, the capability for intellectual effort, the quality of college work, the effect on memory, concentration, reasoning, will-power and morals in general, reaches some interesting conclusions which appear to be no more favorable than those in regard to the purely physical aspects of the question (*California State Jour. Med.*, October, 1913, p. 392).

Power agrees that there can be no question as to the desirability of a fairly developed muscular system, kept in reasonable activity, for the effect on the organism as a whole and on the brain in particular. In support of this he cites the instance of poorly developed inmates coming from the slum districts of the large cities to the Elmira Reformatory, where efforts are made to give the men the advantages of some education as well as opportunity to learn useful trades. These defective persons appeared at first to possess no capacity or inclination to learn anything, but after a course in physical development were able to profit by mental training. This would not apply to the same degree, however, in the case of the students in high schools and universities, where such muscular deficiency is rare. It would apply still less, of course, to the limited class of men who are selected for the athletic teams of the colleges. It is to this class of men that the inquiry of Power was directed. It is pointed out that the men who take on this form of athletics possess the motor type of mind, and a fluidity of attention. They translate suggestions immediately into action. They are not reflective, and are dominated by habit, which, in athletics, expresses itself in automatic action, and just as actions become automatic they exclude the higher mental activities.

On the physiologic side, it is said that fatigue of one tissue from overuse means fatigue of all tissues, and extreme muscular activity means lessened mental activity. The products of fatigue have a no less deleterious effect on the brain-cells than on the muscles and other organs. Many of the answers to a questionnaire sent out by Power to college and high-school teachers support the conclusion that the members of the athletic teams are not good students, and such general observations are made as that they show "inactivity of all mental power," "seem to be stupid," "do not study, but also they are men who, anyhow, would not study," and that "our athletes do not represent our highest class of students."

It was realized by Power that answers to the points enumerated above as to scholarship, mental powers, morals, etc., would have greater value if arrived at after close psychologic investigation by experts, continued over a long period; but on account of the difficulty of carrying out such investigation, and its doubtful value unless conducted in the most painstaking manner, he believed that a consensus of opinion of the majority of men directly engaged in teaching college students must have a value not easily impugned. Taking the answers to the questionnaire it was found that 60 per cent. of the total replies expressed the belief that the athlete is naturally disinclined to study. The high-school professors to the extent of 75 per cent. held this opinion. Likewise 75 per cent. of the answers received, being in equal proportions from university and high-school professors, were to the effect that men in training show a falling off in scholarship. As to the influence on the mental faculties, 94 per cent. believe that concentration is weakened or destroyed; 86 per cent. note weakening of memory; 83 per cent. weakening of will-power, and 78 per cent. of power to reason. The high-school teachers again are inclined to record higher percentages. In regard to the effect on morals, 30 per cent. of the replies were neutral, while a very large proportion of the remaining answers referred chiefly to the ethics of the game and the training period and were favorable to a good moral influence, although there were specific replies which were strongly adverse. For instance, one reply stated that "excessive exercise causes in many cases a kind of specialization that makes a student lose sight of his better ideals, and he degenerates to the level of brutehood." An eminent university president believed that the effect of athletics on ideals and power of restraint is "better when moderate, ruinous when overdone." Power had in mind in asking this question, ideals of conduct not confined to the game, but as a continued influence during life, and though the answers were favorable to the good influence of athletics on the morals of the game, he feels that they are not responsive to the question. History shows that periods of artificially enforced restraint are followed by periods of license, and the custom which makes heroes of athletes and inculcates in them a spirit to win at all costs, to act toward their opponents, as has been said, "in a manner that would almost justify homicide," can hardly be the source of improved ideals. Lastly, the necessity for large sums of money to produce winning teams has commercialized athletic contests and has induced the managers to "put on" the kind of sport that pays, with a regrettable lowering of the whole status of athletics. The subject has been summed up as follows: "The whole influence of the student body of prominent athletics is bad, inasmuch as the interests of the students are taken away from what seems to be the proper place for them, withdrawn from the most important part of man's life and placed on something as trivial as a game." This undoubtedly goes direct to the question of ideals and morals, and is opposed to mental concentration and improvement.

The Cost of Vermin

Rats, mice, flies, mosquitoes and the various forms of body parasites have always been held in contempt and disgust and regarded as vermin. Growing knowledge of the important rôle played by these lower forms of animal life in the transmission of disease is ample justification for this feeling. The attention which has been called to parasites and scavengers of the human race has resulted in demonstrating another reason why mankind has always abhorred them. They are an exceedingly expensive luxury. A recent article in the *Farm and Fireside* discusses the amount of damage done in this country by rats, and estimates that there are in the United States at least 300,000,000 of these animals, alike destructive to property and dangerous to health. Rats are said to destroy a hundred million dollars' worth of grain every year in this country, or enough to feed one hen for every man, woman and child in the nation. The annual cost of rats to the nation is estimated at $360,000,000. In addition, the rat population of the country forms a fertile field for the dissemination of bubonic plague, which only needs a starting-point in any of our seaports to spread throughout the country and cause the loss of thousands of lives. In the same issue of the *Farm and Fireside*, but in a different department, appears an article on the cattle-tick, in which it is estimated that the difference between the market value of an animal free from this parasite and one infected with it is about $8 per cow, and that the cattle-tick is to-day costing the stockmen of the country a billion dollars each decade, or a hundred million dollars each year. The discovery and development of bacteriology showed that man had been carrying on for centuries an unconscious struggle with the lower forms of vegetable life. Recent additions to our knowledge of the habits and characteristics of vermin show that an equally relentless struggle has been going on between man and the lower forms of animal life.

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Society Proceedings

COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, ATLANTIC CITY, JUNE 22-26.

Alabama Medical Association, Montgomery, April 21-24.
Am. Assn. of Genito-Urinary Surgs., Stockbridge, Mass., May 15-16.
American Dermatological Association, Chicago, May 14-16.
American Gynecological Society, Boston, May 19-21.
American Laryngological Association, Atlantic City, May 25-27.
American Medico-Psychological Association, Baltimore, May 26-29.
American Neurological Association, Albany, May 7-9.
American Ophthalmological Society, Hot Springs, Va., May 12-13.
American Otological Association, Atlantic City, May 27-28.
American Pediatric Society, New London, Conn., May 26.
American Society of Tropical Medicine, Boston, May 29-30.
American Therapeutic Society, Albany, May 29-30.
Arizona Medical Association, Tucson, April 21-22.
Arkansas Medical Society, Eldorado, May 19-22.
Association of American Physicians, Atlantic City, May 12-13.
California State Medical Society, Santa Barbara, April 14-16.
Connecticut State Medical Society, New Haven, May 20.
Florida Medical Association, Orlando, May 13-15.
Georgia Medical Association, Atlanta, April 14-16.
Illinois State Medical Society, Decatur, May 19-21.
Iowa State Medical Society, Sioux City, May 13-15.
Kansas Medical Society, Wichita, May 6-7.
Louisiana State Medical Society, New Orleans, April 20-23.
Maryland Medical and Chir. Faculty, Baltimore, April 28-30.
Mississippi State Medical Association, Columbus, April 14-16.
Missouri State Medical Association, Joplin, May 12-14.
Nat. Assn. for Study and Prev. of Tuberculosis, Washington, May 7-9.
National Association for the Study of Epilepsy, Baltimore, May 25.
Nebraska State Medical Association, Lincoln, May 12-14.
New Hampshire Medical Society, Concord, May 13.
New York State Medical Society, New York, April 28-30.
North Dakota State Medical Association, Grand Forks, May 13-14.
Ohio State Medical Association, Columbus, May 5-7.
Oklahoma State Medical Association, Guthrie, May 12-14.
South Carolina Medical Association, Florence, April 14-16.
Texas State Medical Association, Houston, May 12-14.
West Virginia State Medical Association, Bluefield, May 13-15.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

March, XVI, No. 1, pp. 1-126

1 Development of Rectum in Human Embryo. F. P. Johnson, Columbia, Mo.
2 Interstitial Cells of Mammalian Ovary: Felis Domestica. B. F. Kingsbury, Ithaca, N. Y.
3 Tract of Lissauer and Substantia Gelatinosa Rolandi. S. W. Randon, Chicago.

Annals of Otology, Rhinology and Laryngology, St. Louis

December, XXII, No. 4, pp. 913-1202

4 Histologic Pathology of Accessory Sinuses. J. C. Beck, Chicago.
5 Endonasal Route of Attack in Hypophyseal Tumor Cases. W. E. Sauer, St. Louis.
6 Cavernous Sinus Thrombosis Due to Organisms of Streptothrix Group. H. Horn, San Francisco.
7 Points of Analogy between Otosclerosis and Arthritis Deformans. J. F. O'Malley, London.
8 Complications after Submucous Operation for Corrections of Septal Deviations. G. W. Mackenzie, Philadelphia.
9 Ulceration of Upper Air Passage in Pulmonary Tuberculosis. J. N. Mackenzie, Baltimore.
10 Radical Removal of Faucial Tonsil. V. P. Dabney, Washington.
11 Removal of Faucial Tonsil Followed by Digital Evisceration of Its Capsule. J. A. Ellegood, Wilmington, Del.
12 Frontal Mucocele. G. W. McCoy, Los Angeles.
13 Follicular Odontoma of the Superior Maxilla. Report of a Case. L. W. Dean, Iowa City, Ia.
14 Drainage of Cisterna Magna in Meningitis. N. H. Pierce, Chicago.
15 Use of Vaccines after the Mastoid Operations. W. C. Braislin, Brooklyn.
16 Septic Thrombosis of Lateral Sinus. H. Friedenwald, Baltimore.
17 Bone Conduction in Syphilis. O. Beck, Vienna.
18 Nasal Voice with Reference to Its Bearing on Practice of Rhinolaryngology. E. L. Kenyon, Chicago.
19 Caisson Workers' Deafness. G. W. Boot, Chicago.
20 Ménière Symptom Complex. H. Hastings, Los Angeles.
21 Malignant Tumors of Nasopharynx. Report of Cases. A. L. Kelsey and J. M. Brown, Los Angeles.
22 Inflammation of Lateral Columns of Pharynx Leading to Abscess Formation. Report of Cases. H. L. Swain, New Haven, Conn.

Archives of Internal Medicine, Chicago

March, XIII, No. 3, pp. 349-508

23 *Pulmonary Attack Simulating Lobar Pneumonia, Caused by Pulmonary Embolism and Infarction from Latent Venous Thrombosis. L. A. Conner, New York.
24 *Comparative Value of Cardiac Remedies. T. C. Janeway, New York.
25 Interpretation of Auscultatory Blood-Pressure Sounds. D. R. Hooker and J. D. Southworth, Baltimore.
26 *Pathologic Study of Two Cases of Heart-Block with Adams-Stokes' Syndrome. E. B. Krumbhaar, Philadelphia.
27 *Coagulation of Normal Human Blood. R. I. Lee and B. Vincent, Boston.
28 Ulcus Ventriculi; A Review. M. H. Gross and I. W. Held, New York.
29 *Skin Reaction Indicative of Immunity Against Typhoid. F. P. Gay and J. N. Force, Berkeley, Cal.
30 Influence of Lithium and Atophan on Uric Acid Excretion of Gouty Patient. A. L. Daniels, Columbia, Mo.
31 Comparative Study of Phenolsulphonephthalein Elimination and Incoagulable Nitrogen of Blood in Cardiorenal Diseases. J. H. Agnew, Ann Arbor, Mich.
32 Comparison of Methods of Obtaining Alveolar Air. W. M. Boothby and F. W. Peabody, Boston.

23. Pulmonary Attack Simulating Primary Lobar Pneumonia.—Four patients with acute pulmonary disease supervening in apparently healthy persons, were admitted to the hospital with the diagnosis of acute lobar pneumonia, but the subsequent course of the disease made it evident that the true condition was that of pulmonary embolism and infarction, resulting from a venous thrombosis which, at the time of the onset of the illness, was latent. These cases cited by Conner would almost certainly have passed for instances of atypical pneumonia with a complicating venous thrombosis, had it not been for the fact that at this time Conner was interested in observing the clinical manifestations of thrombophlebitis as it occurs in the course of typhoid, and had been much impressed by the frequency with which pulmonary embolism occurred before any local signs of thrombosis could be detected.

In three of the four cases the sputum consisted chiefly of liquid or clotted blood, and in no case bore any resemblance to the characteristic sputum of pneumonia; in every case the physical signs differed in some respect from those usual in pneumonia—in two cases by the short duration of the signs of consolidation, in one by the absence of frank signs of consolidation, and in one by the anomalous and protracted pleural signs; in all the cases there were indications that the pulmonary lesions were multiple; in none of the cases was there an introductory rigor; in three of the four cases the temperature chart bore little resemblance to the usual chart of pneumonia, and, finally, in three of the four cases there were points in the history to indicate that venous thrombosis existed before the onset of the pulmonary symptoms. No one of these facts alone would be entitled to much weight in the attempt to differentiate these cases from those of primary pneumonia, but taken together they form a mass of evidence sufficient, Conner thinks, to warrant the conclusion that all of these cases were instances of pulmonary embolism and infarction.

24. **Comparative Value of Cardiac Remedies.**—In cases of well-compensated mitral disease, in which auricular fibrillation with great tachycardia sets in acutely, Janeway says, the tachycardia can be controlled by digitalis within forty-eight hours with complete relief of the symptoms, and under long continued digitalis medication such patients may maintain a very fair working ability for several years. It is of importance that treatment be instituted before marked dilatation of the right heart and general venous stasis have ensued. The three elements contributing to the result in these cases are: (1) The existence of a disorder of the rhythm, against which digitalis is absolutely effective. (2) The existence of a valve lesion, the detrimental mechanic effect of which on the circulation are peculiarly heightened by auricular fibrillation. (3) The acute character of the onset of fibrillation in a heart which would have remained well compensated for years, had not the disturbance of rhythm occurred, and which, therefore, must be considered as having had a good right ventricular myocardium.

Next to these acute cases of fibrillation in response to digitalis comes the type picture of gradual cardiac insufficiency, with general venous stasis and edema. The more these cases

conform to the acute type, the more promptly does the control of the tachycardia by digitalis effect a restitution of function. On the other hand, even in rheumatic mitral disease with fibrillation, if the rate be normal or slow, the effect of digitalis treatment may not be evident until it has been administered for a week or more. In some cases, especially with marked tricuspid regurgitation and liver stasis, it may fail entirely. In other cases the drug acts only after the institution of such accessory measures as the extreme fluid and salt restriction of the Karell diet, which Janeway has found of the utmost value.

The choice of a preparation of digitalis is, to Janeway's mind, largely a matter of taste, provided the one used is known to be effective. As to dosage he prefers a moderate dose, equivalent to not over 0.1 gm. (1½ grains) of the leaves every four hours, which will give definite slowing of the pulse and diuresis in forty-eight hours in rapid fibrillating cases. This dose he continues until the pulse falls to near 60 or becomes bigeminal; failing this, until absorption of edema is complete, or nausea, vomiting, headache or other toxic symptoms ensue.

When any of these evidences of full therapeutic action is obtained, the drug is stopped and not resumed until increasing rate or pulse deficit, or disappearance of coupled beats, show the heart to be escaping from its influence, which usually occurs in from five to ten days. Then one-half or three-quarters of the daily amount given before will control all sypmtoms. In all fibrillating cases with a tendency to rapid rate, after the original digitalis course, Janeway believes the indications for continued, so-called chronic digitalis treatment are absolute. He is positive that failure to obtain satisfactory results from digitalis therapy in the class of cases just discussed is evidence of an inefficient preparation, insufficient dosage, or an improper mode of administration. Whenever digitalis fails, a second and then a third trial should be made with a drug obtained from another source. Failure to respond to digitalis on the part of a heart the seat of active inflammatory processes, as in subactue and chronic septic endocarditis, can in nowise be expected, even though fibrillation exists.

In hypertensive cases of cardiac insufficiency with normal rhythm when the patient develops the picture of chronic passive congestion of the viscera with edema, digitalis is as clearly indicated as it is in fibrillating mitral hearts. Janeway insists that dangerous increase in blood-pressure from digitalis, as used in human beings, is a superstition without any basis of clinical fact. When digitalis alone does not effect prompt improvement in such patients, the caffein diuretics come in as valuable aids.

In a number of instances Janeway has seen marked and lasting benefit from digitalis in aortic insufficiency, where the clinical picture was that of chronic passive congestion and edema.

26. **Pathologic Study of Two Cases of Heart-Block.**—In one case cited by Krumbhaar in which there were transient attacks of heart-block, complicated with Adams-Stokes' syndrome during the last eight days of life, there was found a marked cellular infiltration of the auriculoventricular conductive system. Furthermore, the right branch was found completely obliterated, showing that total destruction of one branch is compatible with an at times normal pulse.

In the second case, one of chronic salpingitis in a woman who sought the hospital for relief from a chronic rheumatic endocarditis with failing compensation, the hitherto localized septic process caused, three weeks after admission, a general peritonitis, pleuritis, pericarditis and localized areas of acute myocarditis, especially in His' bundle and Tawara's node. On the day of her death, due presumably to the heart-block thus caused, there occurred four typical attacks of Adams-Stokes' syndrome, the last of which was fatal.

27. **Coagulation of Normal Human Blood.**—Experimentally Lee and Vincent have been able to demonstrate that the fundamental principles in coagulation as studied by Bordet and Delange in rabbits' blood also hold true for normal human blood. The differences which they found are minor ones. They have found that thrombin requires a longer time for its formation in human blood than in rabbits' blood, and that the minimum amount of serozyme required to permit coagulation to ensue is larger in human blood than in rabbits' blood.

They have been unable to confirm the work of Bordet and Delange on the use of peptone as cytozyme. This is probably due to differences in the preparation of peptone.

Although their argument is open to possible objections, they have shown that white corpuscles can be used as cytozyme; they are perhaps not as efficacious as blood-platelets or tissue juice. They have not been able to employ as cytozome the heated muscle juice of non-human animals in their work on human blood. This is somewhat different from the findings of Bordet and Delange, and tends to confirm their suggestion that there is a certain amount of specificity in the action of the various elements of coagulation. Lee and Vincent found that serozyme is intimately associated with the globulins of the blood. They describe a technic of obtaining human blood which has given very satisfactory oxalated plasma.

29. **Skin Reaction Indicative of Immunity against Typhoid.**—Gay and Force found that a preparation of the typhoid bacillus ("Typhoidin") in all respects similar to Koch's old tuberculin produces a clear-cut cutaneous reaction by the von Pirquet method in 95 per cent. of cases that have recovered from typhoid (20 cases positive out of 21). Two of the cases had suffered from the disease forty-one and thirty-three years before, respectively. The reaction is negative in 85 per cent. of individuals without history of typhoid (41 cases tested). The 9 per cent. of these supposedly control individuals that gave a distinct positive reaction may be suspected of having had a mild and undiagnosed attack of typhoid. Of fifteen individuals vaccinated by the Army method from four and three-quarter years to eight months previously, nine gave a positive skin reaction. Twenty-five individuals vaccinated by the Gay-Claypole sensitized vaccine for from one to eight months previously gave uniformly a positive reaction.

No comparison is made of the efficacy of the two methods, although it is suggested that the skin test may eventually be used for such a determination. It is further suggested that the test is of presumptive value in indicating protection against typhoid whether acquired by recovery from the disease or by artificial immunization against the disease. The test may eventually be used as an indication for revaccination in the individual case.

Arizona Medical Journal, Phoenix

March, II, No. 2, pp. 1-19

33 Constipation. F. D. Garrett, El Paso, Texas.
34 Acute Anterior Poliomyelitis. F. H. Redewill, Phoenix.

Arkansas State Medical Society Journal, Little Rock

March, X, No. 10, pp. 253-268

35 Organization. C. S. Holt, Fort Smith.
36 Examination of Eyes and Ears of School Children. R. H. T. Mann, Texarkana.
37 Follicular Cysts of Ovary. R. L. Saxon, Little Rock.

Boston Medical and Surgical Journal

March 19, CLXX, No. 12, pp. 405-440

38 New Coolidge Roentgen-Ray Tube. H. W. Van Allen, Springfield.
39 Tragic Aspects of Whooping-Cough. P. H. Sylvester, Newton.
40 Neurological Social Service, Massachusetts General Hospital, M. Ryther, Boston.
41 Is Sanatorium Treatment Worth While? G. L. Farmer, Boston.

March 26, CLXX, No. 13, pp. 441-480

42 *Treatment of Syphilitic Diseases of Central Nervous System by Intravenous Injections of Salvarsan. L. H. Spooner, Boston.
43 Salvarsanized Serum ("Swift-Ellis Treatment") in Syphilitic Diseases of Central Nervous System. J. B. Ayer, Boston.
44 *Epicondylitis (Franke) or Tennis Elbow. W. P. Coues, Boston.

42. **Treatment of Syphilitic Diseases by Intravenous Injections of Salvarsan.**—The following syphilitic character of the process was proved, with one exception, in all the forty-nine cases on which Spooner's work is based. He claims that it is possible to treat in a satisfactory manner syphilitic diseases of the central nervous system by intravenous salvarsan

in an ambulatory clinic. Small doses of the drug are necessary for this purpose, but such dosage yields results. With the exception of six cases placed subsequently on serum treatment, symptomatic improvement has resulted from thorough treatment in a high percentage of cases of tabes and in all cases of syphilis of the central nervous system. No distinct improvement has resulted from treatment of the few cases of general paresis under observation. Improvement in strength and gain in weight is the rule in those who receive benefit. The relief of lancinating pains in tabes and headache in cerebral syphilis is most striking.

Biologic and cytologic changes (in blood and spinal fluid) indicate that there is an organic basis to this symptomatic improvement. Improvement has been maintained over a long period of time—in many instances for from one to two years. The results of laboratory investigation when obtainable and the amelioration of symptoms correspond. Whereas the failures have been in old-standing cases, it is impossible to show any constant relationship between the degree of improvement and the duration of the nervous lesion.

Spooner emphasizes that the most striking improvement follows the first or second injection. Treatment must be persistent and prolonged and should be continued even if all symptoms and laboratory findings have long disappeared. Reactions are infrequent with small doses of the drug. Accidents are rare. The most pronounced successes are in those who show evidence in blood or spinal fluid of intense syphilitic infection. The failures have occurred in those showing feeble reactions. This treatment is advised by Spooner in all cases of syphilitic disease of the central nervous system and abandoned for the serum treatment when conscientious effort in this simple and safe procedure has failed.

44. **Epicondylitis (Franke) or Tennis Elbow.**—From a study of the trouble based on those cases in the literature and of personal ones Coues concludes that two lesions might be causing the symptom complex known as tennis-elbow or epicondylitis. First, a partial tearing of some of the muscular attachments from the external epicondyle, giving rise to the separation of the bony spicules with the possibility of a periostitis from such tearing, which need not necessarily be marked enough to show a radiograph. Second, injury to the radiohumeral joint capsule from antagonistic muscular contraction of the supinator brevis and supinator longus, as believed by Preiser.

Bulletin of the Medical and Chirurgical Faculty of Maryland, Baltimore

March, VI, No. 9, pp. 137-154

45 Baltimore's Facilities for Handling Contagious Diseases. W. Smith, Baltimore.
46 Library Advantages for County Members. M. C. Noyes, Baltimore.

Colorado Medicine, Denver

March, XI, No. 3, pp. 69-114

47 Induced Pneumothorax; Its Use and Abuse. A. S. Taussig and W. N. Beggs, Denver.
48 Technic of Artificial Pneumothorax. H. Schwatt, Edgewater.
49 Cleft Palate. T. E. Carmody, Denver.

Indiana State Medical Association Journal, Fort Wayne

March 15, VII, No. 3, pp. 93-140

50 Laboratory Efficiency. L. B. Wilson, Rochester, Minn.
51 Blood-Pressure and Significance in Hypertension Cases. J. R. Young, Terre Haute.
52 Surgical Treatment for Intracranial Pressure. C. C. Rogers, Chicago.
53 Inexpensive and Simple Ether Vaporizer. P. B. Coble, Indianapolis.
54 Minor Point in Mounting Eye Specimens. W. N. Sharp, Indianapolis.
55 Simple Method of Operating in Cicatrices of Orbit. F. A. Morrison, Indianapolis.

Journal of Medical Research, Boston

March, XXX, No. 1, pp. 1-85

56 *Diphtheroid Bacillus from Leprosy Lesions. S. B. Wolbach and J. A. Honeij, Boston.
57 Cultivation of Free Living Filterable Spirochete (Spirocheta Elusa; New Species from Water.) S. B. Wolbach and C. A. L. Binger, Boston.
58 Filterable Spirochete from Fresh Water. Spirocheta Bifieza (New Species). S. B. Wolbach and C. A. L. Binger, Boston.
59 Filterability of Spirocheta Duttoni. J. L. Todd, Montreal, and S. B. Wolbach, Boston.
60 Distribution and Morphology of Spirocheta Duttoni and Spirocheta Kochi in Experimentally Infected Ticks. S. B. Wolbach, Boston.
61 *Degeneration of Islands of Langerhans Associated with Experimental Diabetes in Cat. J. Homans, Boston.
62 Study of Market Butter of Boston. M. J. Rosenau, W. D. Frost and R. Bryant, Boston.

56. **Diphtheroid Bacillus from Leprosy Lesions.**—The authors describe a culture of diphtheroid bacilli which they have isolated from a case of leprosy. This culture corresponds in all respects to the majority of diphtheroids isolated from leprosy in various parts of the world. The case was that of a Portuguese male with the tubercular type of leprosy; age 47; an inmate of the Massachusetts State Institution for Lepers on Penikese Island. The patient is known to have had the disease for sixteen years. The material obtained was an epitrochlear lymph-node.

The following mediums were inoculated, the selection being made because of reported successful cultivations of the leprosy bacillus by various authors: Ascitic fluid dextrose agar; ascitic fluid agar; ascitic fluid glycerin agar; Ficker's brain agar; Dorsett's egg medium; glycerin agar and placenta extract agar prepared according to the methods of Kedrowski and Duval. Two sets of tubes were inoculated; one each for incubation under aerobic and anaerobic conditions. Immediately after the operation, two guinea-pigs were inoculated intraperitoneally and subcutaneously with a heavy suspension of the gland tissue. Preparations stained for leprosy bacilli show acid-fast bacilli in enormous numbers. The guinea-pigs were kept under observation for nine months and developed no lesions.

Ten days after inoculation a growth was seen in a single aerobic tube of ascitic fluid dextrose agar in the form of a translucent whitish band around the piece of gland tissue. The peculiarities of the growth were evident on first examination, and its similarity to diphtheroids isolated by other observers was at once apparent, and for that reason transfers were made to various mediums. When first isolated, the growth was poor in bouillon, with or without glycerin, and on plain agar, dextrose agar and glycerin agar. After several months' cultivation the bacillus grew readily on these mediums. No growth has been obtained on potato, with or without the addition of 0.5 per cent. to 1 per cent. of sodium carbonate. Glycerin does not favor the growth of this bacillus.

The most striking thing about the morphology of this bacillus is its extreme pleomorphism. The morphology varies considerably with the medium employed, and with the age of the culture. A characteristic feature of all cultures is the presence of acid-resisting granules and segments. The bacilli are not motile. They are strongly Gram-positive. They stain by the ordinary aniline dyes, though less intensely than most other bacteria, and markedly less than the diphtheria bacillus. After staining with carbol fuchsin, they resist decolorization to the extent that portions of the bacilli remain a bright red, after treatment with decolorizing agents. No lesions have been obtained in Japanese waltzing mice, guinea-pigs, rabbits and white rats.

61. **Degeneration of Islands of Langerhans.**—Homans concludes that the islands of Langerhans must be deeply concerned with experimental pancreatic diabetes, for (*a*) the removal of more than three-quarters of the pancreas of the cat, leaving the main duct *in situ*, usually leads to a disappearance of secretory granules in the islands of Langerhans, with suggestive evidence of overactivity, without the production of diabetes, and (*b*) the same procedure occasionally causes a degeneration of the islands of Langerhans accompanied by fatal diabetes without disturbance of the remaining acinous tissue.

Journal of Nervous and Mental Diseases, Lancaster, Pa.

March, XLI, No. 3, pp. 137-207

63 Case of Subcortical or Pure Motor Aphasia (Dejerine) or Anarthria (Marie). F. X. Dercum, Philadelphia.
64 *Histopathologic Changes in Spinal Cord Due to Impact. An Experimental Study. A. R. Allen, Philadelphia.
65 Case of Dystonia Musculorum Deformans. C. C. Beling, Newark, N. J.

66 *Albumen Content of Spinal Fluid, Its Relation to Disease Syndromes. A. Myerson, Taunton, Mass.
67 *Contralateral Periosteal Reflexes of the Arm. A. Myerson, Taunton, Mass.
68 Contralateral Oppenheim and Gordon Reflexes. A. Gordon, Philadelphia.

64. Histopathologic Changes in Spinal Cord.—Three cases of fracture dislocation of the spinal cord in the human subject in which the median longitudinal incision was used are cited by Allen. The first case was a man of 50 years of age who had fallen thirty feet from a scaffolding, landing on his back and head. There was complete motor paralysis and anesthesia for all forms of sensation of the lower limbs. The Roentgen ray discovered a lateral displacement of the sixth on the seventh thoracic vertebra. The diagnosis of fracture dislocation of the spinal column complicated by fracture of the base of the skull was subsequently confirmed at necropsy. Allen saw this patient ten hours after the injury by which time the limit of anesthesia had ascended about fifteen centimeters and his condition was desperate. The median longitudinal incision was made and there was discharged at once from the cord wound considerable blood. The next day the limit of anesthesia had begun to fall and in forty-eight hours had fallen to the original level. Unfortunately the cranial condition began to give trouble about five days after the injury and ten days after the accident he died.

The second case was that of a man about 40 years of age who had been struck just below the vertebra prominens by the end of the pole of a rapidly moving wagon. There was a transverse lesion of the first thoracic segment of the cord presenting the symptom complex of complete solution of continuity. The area of anesthesia ascending slowly and the conditions justifying exploratory laminectomy, Dr. Edward Martin operated about seven hours after the injury. The course of this case subsequent to operation gave every reason to hope for a favorable termination. In two days the limit of anesthesia had fallen to the original level and in four days there was a moderate return of deep pressure sense and sense of position in the lower extremities.

From the first there were indications that only most careful nursing would prevent the formation of bed-sores. His general condition became progressively better and all signs were favorable when, ten days after the operation, his wife insisted on taking him home. He died several days after, his entire sacral region being the site of an enormous bed-sore.

The third case was one of fracture dislocation in the upper thoracic region in a young boy of about 17 years. Dr. C. H. Frazier operated four hours after the injury. When the cord was incised the blood spurted out as if under great pressure. It is now over a year since this patient was operated on. Function though not restored is improving gradually.

66. Albumin Content of Spinal Fluid.—In the full-fledged general paresis, Myerson found that the relationship of albumin, globulin, cells and Wassermann is quite constantly one of parallelism but that in the remissions the Wassermann reaction disappears first, the cell count and globulin increase diminish next, and the albumin most constantly remains at a high level of increase. This points toward a conclusion which is merely a forward deduction—namely, that in the preparetic stage the albumin increase is probably the first sign of disease. In Korsakoff's disease, in certain cases of tumor, and in other organic diseases there is a dissociation of albumin and globulin in this sense, that there is either marked increase of albumin without globulin or that a marked increase of albumin, say 3+, is accompanied by a globulin increase of say, only 1+.

These two series of facts lead Myerson to the conclusion that the increase of albumin is a primitive reaction of the nervous system and is the first as well as the most constant of the present known chemical and biologic changes to appear in the spinal fluid. He urges that tests to ascertain its presence should be part of the routine spinal fluid examination. Its exact measurement and significance constitute a task worthy of neurologic research.

67. Periosteal Reflexes of the Arm.—With the patient lying flat on his back and his arms in an easy, relaxed attitude, usually with slight flexion at elbow and moderate internal rotation, Myerson taps the middle of the clavicle with a reflex hammer. When present, the response elicited is a contraction of the biceps and pectoralis major of the other arm. Usually when the contralateral response is elicited, there is at the same time a homolateral response of the corresponding muscles, but on several occasions in his experience, the contralateral response only has been present.

This contralateral arm response is elicited only with hyperactivity of the arm reflexes generally. Nevertheless, certain cases giving very lively homolateral reflexes from the percussion of the ordinary points (radial styloid, humerus, ulnar styloid) have failed to give the contralateral response from the clavicle. At the same time the cases giving only moderately increased arm responses have shown very lively contralateral clavicular response. This is mostly in such organic diseases whose effect is to increase reflexes, notably general paresis, hemiplegia, multiple sclerosis, tumor of the brain and meningitis. It may be stated that the response is present in only a minority of patients presenting these diseases, and usually in such cases the other responses are very active.

It is present, occasionally only, in certain abnormal mental conditions not at present understood to be organic. In a few cases of dementia praecox, manic-depressive insanity and hysteria, the response was elicitable, despite the fact that organic disease could be ruled out chemically by negative Wassermann in serum, by negative Wassermann, cell count, globulin and albumin in spinal fluid, by the absence of kidney changes and by negative fundus examination. In such cases the emotional content was usually of an intense kind, either of fear or anxiety. The response is absent under normal conditions, therefore Myerson claims for this sign that its presence indicates an abnormal condition, not necessarily one associated with organic disease, although this is the more usual association.

Kansas Medical Society Journal, Kansas City

March, XIV, No. 3, pp. 89-130

69 Gastric and Duodenal Ulcer. E. T. Shelly, Atchison.
70 Gastric and Duodenal Ulcers. Report of Cases. G. M. Gray, Kansas City.
71 Physicians and Druggists Co-Workers, not Competitors. F. G. Fowler, Independence.

Lancet-Clinic, Cincinnati

March 21, CXI, No. 12, pp. 329-356

72 Progress of Serology in Psychiatry. B. Holmes, Chicago.
73 Proper Interpretation of Wassermann Reaction in Diagnosis, Its Value as Guide to Treatment. N. D. Goodhue, Dayton.
74 After-Treatment of Abdominal Section. C. L. Bonifield, Cincinnati.

Medical Record, New York

March 21, LXXXV, No. 12, pp. 507-552

75 *Method for Estimating Functional Capacity of Kidneys by Forced Elimination of Preformed Urea. G. W. McCaskey, Fort Wayne, Ind.
76 Use of Pineal Gland in Treatment of Certain Classes of Defective Children. W. N. Berkeley, New York.
77 Syphilis. W. P. Cunningham, New York.
78 Passing of Stomach Tube. J. Meyers, Albany.
79 Etiology and Surgical Treatment of Gastric and Duodenal Ulcer. J. S. Brown, Montclair, N. J.
80 Surgical Ionization and Other Physical Forces in Treatment of Cancer. G. B. Massey, Philadelphia.
81 *Skin Varnish and Substitute for Rubber Gloves. E. McDonald, New York.
82 Pituitary Preparations in Post-Operative Conditions. T. W. Harvey, Orange, N. J.

March 28, LXXXV, No. 13, pp. 553-598

83 Mental Infantilism in Tic Neurosis. L. P. Clark, New York.
84 Determination of Blood-Pressure as Aid to Diagnosis and Prognosis in Certain Diseases. A. Woldert, Tyler, Tex.
85 Nerve Injuries. C. G. Levison, San Francisco.
86 *Case of Syphilis Cured Apparently by Accident. J. B. Clark, New York.
87 Streptococcic Infection of Cervix Uteri. E. A. Peterson, Mobile, Ala.

75. Abstracted in THE JOURNAL, Sept. 20, 1913, p. 994.

81. Skin Varnish and Substitute for Rubber Gloves.—The skin coating devised by McDonald, which is said to be impervious, easily applied and sterile, is composed of a base of pyroxylin (soluble cotton of commerce) dissolved in amyl acetate and acetone, with the addition of propyl and ethyl alcohol and saponifiable ester. It contains 1 per cent. of a

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strong oil—soluble germicide. The varnish is a golden yellow liquid, having the consistency of maple syrup.

This solution is said to have the following advantages: It is readily applied and removed; it is insoluble in all water solutions and not affected by the heat of the body; it adheres strongly to the hand and penetrates all the crevices of the skin, fixing the bacteria; it goes readily under the nails, where the most organisms reside; it cannot be scraped off the skin with a knife, the superficial layers of the skin itself coming away along with the varnish if pressure is exerted.

After the hands are sterilized, and reasonably dry, a small quantity is poured in the palm of one hand and then rubbed over all surfaces of both hands, as if it were vaseline or other grease. Care should be taken to coat every part; as soon as stickiness begins, the hands are held quiet or waved in the air for a minute or so until the varnish dries. If the room is hot, or it is summer, a slight stickiness or "tacky" feeling may persist; but this may be immediately removed by plunging the hands into sterile water. The varnish then is smooth, firm and elastic, and may be removed only by acetone or other solvent of collodion. The best solvent for removal is equal parts of acetone and denatured alcohol. Removal is best done by a piece of absorbent cotton and a saucer of the alcohol-acetone solution. An orange stick is useful to work under the nails.

86. **Case of Syphilis Cured Apparently by Accident.**—By mistake Clark's patient used 2 ounces of unguentum hydrargyri in the space of four rubbings, and rubbed it in over the entire body. After six days there was a decided diminution of the macular rash, and as he showed no toxic effects, he was again started on inunctions, and made to understand how to proportion the amount used at each rubbing and told to use it this time but every other day.

This treatment was continued until May 3, which was a period of just one month's duration. The patient at that time left the city. Just six years afterward he returned. During that period he had no treatment or care of any kind; he felt perfectly well and had seen no signs of the disease. The Wassermann reaction proved to be entirely negative. Clark asks, is not the amount of mercury which the body can endure, barring the corrosive salts, very much greater than is commonly supposed? Is it not within the province of reasonable speculation that we may come as near to a therapic sterilans magna with mercury as with an arsenical preparation?

Missouri State Medical Association Journal, St. Louis

March, X, No. 9, pp. 305-354

88 Causation and Prevention of Infantile Paralysis. E. W. Saunders, St. Louis. R. Meisenbach, Buffalo, and W. E. Wisdom, De Queen, Ark.
89 Nailing of Joint Fractures, Report of Cases. E. F. Robinson, Kansas City.
90 Intussusception in Infants. F. C. Nifong, Columbia.
91 Luke the Greek Physician. (Concluded.) G. Homan, St. Louis.
92 Relation of Atmospheric Air to Tuberculosis. H. Lee, St. Joseph
93 Advantages of Organization in Medical Profession. T. O. Klingner, Springfield.

New Jersey Medical Society Journal, Orange

March, XI, No. 3, pp. 109-162

94 Nature, Cause and Relief of Nephritis. M. H. Fischer, Cincinnati.
95 Wounds and Their Treatment. G. K. Dickinson, Jersey City.
96 How Can We Lower Mortality in Abdominal Surgery? J. W. Kennedy, Philadelphia.
97 Contract Practice. J. S. Yates, Paterson.

New York Medical Journal

March 21, XCIX, No. 12, pp. 561-612

98 Fairy Tales as Determinant of Dreams and Neurotic Symptoms. A. A. Brill, New York.
99 Abderhalden Reaction in Psychiatry. B. Holmes, Chicago.
100 Scarlatiniform Eruptions in Septic States. R. N. Willson, Philadelphia.
101 Relaxed Ear Drums. H. Hays, New York.
102 Etiology and Treatment of Infantile Wasting. H. Lowenburg, Philadelphia.
103 Gynecic Examination. C. M. Stimson, Philadelphia.
104 Acute Lymphocythemia. E. E. Cornwall, New York.
105 Trachoma and Allied Conjunctival Affections. H. W. Wootton, New York.
106 Graduate Nurse. R. Hertzberg, Stamford, Conn.

March 28, XCIX, No. 13, pp. 613-660

107 Treatment of Chronic Nephritis. J. Tyson, Philadelphia.
108 Conservation of Functions of Ear, Nose and Throat. W. S. Bryant, New York.
109 Obstructions in Lower Ureter. L. Buerger, New York.
110 Teaching Classification for Terata and Hemiterata. R. A. Kelly, Philadelphia.
111 •Common Colds. N. P. Stauffer, Philadelphia.
112 Technic of Oil-Ether Colonic Anesthesia. J. T. Gwathmey, New York.
113 Organic and Psychogenic Delirium. H. L. Levin, Ogdensburgh.
114 Dose of Hexamethylenamin. F. D. Austin, Charlotte, N. C.
115 Salvarsan in Rhinoscleroma. L. G. Kaemperer, New York.

111. **Common Colds.**—Stauffer divides rhinitis into three stages: (1) Dryness or prickling of nose and throat accompanied by chilliness. The mucosae are quite hyperemic, dry and free from secretions; headache with fulness between the eyes. The temperature ranges from 99 to 104 F. Treatment comprises hot baths, purges (calomel and salts; salts especially to deplete the system of water); rest in bed; icebag to forhead; hot water bag to feet; internally 10-grain Dover's powder and hot lemonade to promote sweating; in the nose, locally, epinephrin 1:5,000. (2) Profuse watery discharge, throat sore, headache less. Treatment: Atropin internally until dryness of nose and throat develops; hot alkaline nasal douches; hydrochlorid of cocain daily, 1 per cent. solution applied. (Caution.—Never prescribe cocain for a patient to use at home). When using cocain always have aromatic spirits of ammonia handy. (3) Mucopurulent discharge, a lowered temperature, pulse less bounding, headache diminishing unless sinuses are involved, whereupon headache and pressure symptoms increase, accompanied by dizziness. Treatment: Hot alkaline nasal douches, hydrochlorid of cocain to nares, oil sprays, strychnin sulphate, $\frac{1}{100}$ grain three times a day, egg and milk, increased exercise, alcohol rubs twice daily; hexamethylenamin 5 grains, internally three times a day. This deals with the common cold up to the involvement of the sinuses, whether of the nose, ear or mastoid.

New York State Journal of Medicine

March, XIV, No. 3, pp. 119-174

116 Head and Trunk Position in Treatment of Surgical Lesions of Abdomen. R. S. Fowler, Brooklyn.
117 Chronic Stenosis of Larynx. T. J. Harris, New York.
118 •Intravenous Use of Paraldehyd. G. K. Collier, Sonyea.
119 Past and Present Relations between Public and Medical Profession. E. B. Kaple, Elbridge.
120 Certified Milk of Medical Society of County of Westchester. B. F. Drake, New Rochelle.
121 Phases of Treatment of Strangulated Hernia. F. Flaherty, Syracuse.
122 Ileus Due to Bands and Adhesions. G. F. Comstock, Saratoga Springs.
123 Differential Diagnosis of Paralysis Occurring in Early Life. H. A. Gribbon, Poughkeepsie.
124 Tumor of Hypophysis Cerebri. L. H. Finch, Amsterdam.
125 Treatment of Fracture of Neck of Femur. J. B. Conant, Amsterdam.
126 Diagnosis and Treatment of Iritis. R. L. Crockett, Oneida.
127 Streptococcic Throat Disease. H. J. Ball, Cortland.
128 Non-Medical Anesthetists. L. Irwell, Buffalo.
129 Roentgen Stereography in Diagnosis of Urinary Calculi. E. W. Caldwell and H. M. Imboden, New York.
130 Backache. C. E. Coon, Syracuse.

118. **Intravenous Use of Paraldehyd.**—Collier endeavored to find if this plan of administration would be of any great value in the treatment of the acute confused states met with in epilepsy and other nervous and mental disorders. He thought that if he could administer paraldehyd intravenously prior to any hydrotherapeutic or other measures instead of using chloral or hyoscin or other powerful depressants it would be a great step in advance in dealing with these mental states. He used paraldehyd intravenously in such cases as became mentally confused following seizures, status epilepticus, epileptic furor and for minor surgical operations. In none of the cases has it been necessary to resort to other methods of medication or treatment to produce the desired result.

Collier's method of administering paraldehyd is as follows: A definite amount of paraldehyd, varying from 7 to 22 c.c. of paraldehyd, was first mixed with an equal amount of ether and this solution then diluted with 150 c.c. of cool sterile water or a cool 1 per cent. sodium chlorid solution. Care was

always taken to see that this solution was kept cool, the flask being surrounded with ice while preparations were being made. It was found in this way that the paraldehyd was better held in solution. The flask containing the solution was briskly shaken and through the cork two glass tubes passed. To one of these was attached a rubber tube, at the distal end of which was a fine needle for puncture of the vein. The second tube is curved on itself, the external limb extending below the bottom of the flask to permit of the entrance of air. Short pieces of glass tubing are placed in the rubber tube so that the solution can be inspected and in order to prevent the injection of air into the vein. The flask being inverted, a constant flow of the paraldehyd solution is obtained, which is regulated by the aid of a screw stop-cork. Puncture was made into the median basilic vein, and in only two cases was it necessary to expose the vein for puncture, the needle being inserted into the vein through the skin without any difficulty. Seven cases are cited to show how effective this treatment was.

Vermont Medical Monthly, Burlington

March, XX, No. 3, pp. 53-78

131 Treatment of Nephritis. J. McCrae, Montreal.
132 Epidemiologic Aspects of Travel. H. D. King, New Orleans.
133 Infant Mortality. H. L. K. Shaw, Albany, N. Y.
134 Modern Anesthesia. E. I. Hall, Rutland.
135 Eyes of Schoolchildren. L. W. Flanders, Dover, N. H.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

March, XI, No. 123, pp. 97-144

1 *Unusual Manifestations of Poliomyelitis. F. E. Batten.
2 Addison's Disease in a Boy, with Calcification of Adrenals. H. D. Rolleston and E. J. Boyd.
3 *Tongue-Chewing. B. Myers.
4 Nervous Diseases of Elementary Schoolchildren, Boys and Girls. J. Priestley.

1. **Unusual Manifestations of Poliomyelitis.**—The conditions noted by Batten were: (1) Athetosis of left arm and left side of face, flaccid paralysis of left leg, and some flaccid paralysis of right leg. (2) Poliomyelitis with rigid extension of the legs at the hips. (3) Poliomyelitis with flaccid palsy of the right arm and left leg, with rigidity of the right leg in the flexed position. (4) Poliomyelitis of the right arm and left leg occurring during intra-uterine life. (5) Poliomyelitis and ataxia; probably due to involvement of the cerebellum. (6) Poliomyelitis and toxic neuritis.

3. **Tongue-Chewing.**—The condition described by Myers consisted of chewing of one side of the tongue by the teeth after practically the identical manner in which children chew chewing-gum. In the process the premolars and molars of the particular side of the jaw moved inward over the tongue for about a quarter of an inch, and then glided over and off it until the upper and lower molars were in apposition again; then the movement was repeated. The rate was about ninety per minute. The chewing movement was kept up for a few seconds, minutes, or half an hour. It was performed once or twice daily, or intermittently at various intervals. The repetition of the habit made part of that side of the tongue distinctly red and occasionally inflamed and indented. Myers has never seen a child chew both sides of the tongue, and the side chewed is apparently never varied.

Tongue-chewing is first noticed about the second year of life and persists until middle age, or, perhaps, throughout life. It tends to be less noticeable with advancing years. Either sex may suffer from it. It occurs, apparently, in healthy families, in which certain members suffer from habit spasms. Several members of one family may suffer from it. The habit is inherited, as far as one can see, and not copied. The same side of the tongue is always chewed in the same individual. The mental condition is quite normal and the general health is not interfered with in any way. Bromids stop the tongue-chewing but in time, after leaving off the drug, the habit recommences.

British Medical Journal, London

March 14, I, No. 2776, pp. 573-632

5 Diagnosis of Tabes Dorsalis. G. Holmes.
6 Treatment of Syphilis of Nervous System by Intrathecal Injections. H. Campbell.
7 Problems in Treatment of Venereal Disease. A. L. McIlroy.
8 Arseno-Therapy in Syphilis with "Galyl." J. J. Abraham.
9 Diagnosis and Treatment of Chronic Gonorrhea and Its Local Complications. H. W. Bayly.
10 Case of Otitic Meningitis and Cerebellar Abscess, Recovery. A. E. Barnes and W. S. Kerr.
11 Hygienic Aspect of Coal Mining Industry in United Kingdom. F. Shufflebotham.

Edinburgh Medical Journal

March, XII, No. 3, pp. 193-288

12 Injuries of Eye. W. G. Sym.
13 Diet in Development of Dental Caries and Dyspepsia in Childhood. J. D. Fordyce and J. H. Gibbs.
14 Isolation of Scarlet Fever. W. Robertson.
15 Intestinal Toxemia. D. C. Watson.
16 Place of Gynecology in Medical Curriculum and General Practice. A. H. F. Barbour.
17 Three Cases of Beriberi. R. A. Fleming.

Journal of Obstetrics and Gynecology of British Empire, London

January, XXV, No. 1, pp. 1-52

18 *Rhabdomyosarcoma of Uterus. Report of Two Cases. E. Glynn and W. B. Bell.
19 *Syphilis in Relation to Uterine Disease. B. Whitehouse.
20 Case of Adeno-Chondrosarcoma of the Uterus. H. Murray and R. M. Littler.
21 *Case of Peritoneal Implantation of an Ovum. M. H. Phillips.
22 Fatal Case of Puerperal Infection with Bacillus Aerogenes Capsulatus. D. Dougal.
23 Excessive Separation of Recti Muscles and Hernia of Abdominal Contents in Woman Suffering from Myxedema. J. N. Stark.
24 Lipomatosis of Fibromyoma of Corpus Uteri. G. Ley.
25 Endothelioma of Cervix. A. Donald.
26 Endothelioma of Vulva. D. G. Newton.
27 Concealed Accidental Hemorrhage Accompanied by Intraperitoneal Hemorrhage. H. Clifford.

18. **Rhabdomyosarcoma of Uterus.**—Rhabdomyosarcoma appears to be a very rare neoplasm in the uterus or else it has been overlooked in Great Britain, for, apart from a brief report of one of their own, the authors were unable to find any previously recorded case in Great Britain. Cases have been described by German writers; one by Colomiatti in Italy, and one in America by Robertson, who gave a table of fourteen cases collected from the literature. Three of them, however, were not certainly rhabdomyosarcomata. Glynn and Bell have collected fifteen undoubted cases and three probable ones, and have added two recent cases of their own.

19. **Syphilis and Uterine Disease.**—Whitehouse emphasizes the importance of recognizing a form of fibrosis of the uterus produced by the virus of syphilis; in other words, the existence of a true syphilitic fibrosis; the necessity of testing by the Wassermann reaction all patients who present the clinical picture of chronic metritis and fibrosis, since this may provide the only evidence of the syphilitic nature of the affection; the exact proportion which cases of syphilitic fibrosis bears to similar gross changes produced by other factors must at present remain undetermined, until a longer series of cases has been investigated. Whitehouse suggests that it is possible that so-called cases of non-malignant pyometra are also of syphilitic origin, and if no obvious signs of syphilis are present such patients should be tested by the Wassermann reaction. He also suggests that the menstrual blood be examined for the *Spirochaeta pallida*, especially during the secondary stage of syphilis, since the intracellular bodies described by Ross and McDonagh have been demonstrated. He cites seven cases.

21. **Peritoneal Implantation of an Ovum.**—Phillips describes a case in which an early ovum was found implanted in the subperitoneal connective tissue on the side wall of the true pelvis. Abdominal section had been performed for profuse intraperitoneal bleeding. As blood was oozing from among the fimbriae of the left fallopian tube, this tube was removed. Later on careful examination of the tube showed that the bleeding was due to the presence of small areas of trophoblast and early chorionic villi situated at the bases of two of the fimbriae, but there was no complete implantation sac. On the other hand, a hemorrhagic nodule, with a peritoneal covering, which was excised from the lateral pelvic wall, had been found to contain an early ovum completely embedded in the extraperitoneal connective tissue.

V. 191

Lancet, London

March 14, I, No. 4724, pp. 731-802

28 Changes in Blood in Causation of Surgical Shock. A. R. Short.
29 Agglutination of M. Melitensis by Normal Cow's Milk. P. W. Bassett-Smith.
30 *Case of Transgastric Excision of Gastro-Jejunal Ulcer. B. G. A. Moynihan and E. T. Tatlow.
31 Technic of Wassermann Reaction. C. H. Browning.
32 Two Cases of Popliteal Aneurysm. H. B. Robinson.
33 "Ambulant" Treatment of Fractures with Plaster of Paris and Fracture Clamps. Hackenbruch.
34 Recurrent Intussusception. H. T. Gray.

30. Gastrojejunal Ulcer.—The patient, a male aged 47, whose clinical history forms the basis of Moynihan and Tatlow's paper, had a history of abdominal trouble extending over seven years. At the commencement his only symptom was epigastric pain on kneeling, on leaning forward, in fact, after any movement which caused contraction of his recti abdominis. Gradually this pain became more severe, occurring at almost regular intervals, independently of movement, and accompanied by flatulence and hyperacidity. The pain was of the variety known as "hunger pain," commencing from two to three hours after meals, and being relieved by lying down or taking food. There was never any vomiting. The site of the pain was above and to the right of the umbilicus. At first this pain was only felt at intervals; gradually, however, the intervals became shorter and the periods of pain longer. After three and a half years of this the patient had a sudden attack of severe abdominal pain in the right hypochondrium, which was diagnosed as a subacute perforation; from this attack he recovered without operation. In January, 1912, a posterior gastro-enterostomy was performed by another surgeon. The patient recovered from this operation, and his symptoms subsided only to return about eight months later. The pain after this was lower in the abdomen and more to the left than previously, and was really the only symptom he had; but this pain was severe in character, and for the last few weeks almost constant in duration.

The abdomen was reopened. The scar of the previous operation was excised. The transverse colon, which presented in the wound, was markedly hypertrophied and distended and also kinked in a very curious fashion—its middle portion being adherent to the under surface of the left lobe of the liver and to the diaphragm. Before the stomach could be examined it was necessary to separate the adhesions fixing the colon in this unusual position. This separation was exceedingly difficult, owing to the inaccessibility of the parts. The stomach itself was normal in outline, but there was a scar of an old ulcer on the anterior surface of the first stage of the duodenum. The anastomosis which had been performed was a posterior, vertical, no-loop gastro-enterostomy. The stoma was of adequate size and in the correct position. On feeling the stoma with the finger a hard nodule the size of a shilling, with a dimple in its center, could be detected. This nodule, which was thought to be a gastrojejunal ulcer, could be clearly palpated through the anterior wall of the stomach. In view of the technical perfectness of the original operation and the consequent difficulty of a local resection (posterior), it was decided that a transgastric excision of the ulcer would be a safer operation than an excision of the entire anastomosis. Accordingly, while the assistant passed two fingers, one on either side of the jejunal loop so as to grip the ulcer, a longitudinal incision was made through the anterior wall of the stomach parallel to the curvatures and midway between them. On opening the stomach the posterior wall was everted through the incision, thus bringing the gastrojejunal ulcer into view. The ulcer was almost entirely gastric, being just on the edge of the stoma. On opening the stomach a piece of silk (? or linen thread) was found hanging loose from the region of the ulcer. Excision was performed with scissors, and the opening made in the posterior wall of the stomach closed with through-and-through sutures passed from the mucosa. The anterior incision was then closed, leaving only room for a No. 14 rubber catheter, which was passed into the stomach and along the efferent jejunal loop. After the closure of the anterior incision a few interrupted Lembert sutures were passed posteriorly in the region of the original anastomosis to make things quite snug; the abdomen was then closed, leaving the catheter *in situ*. The patient was given 4 ounces of peptonized milk through the gastrostomy tube before leaving the table.

The patient made an uneventful recovery from this operation. On the twenty-first day the gastrostomy (or gastrojejunostomy) tube was removed and feeding by the mouth commenced. Ten days later the patient left in excellent health and enjoying a light white meat diet.

Practitioner, London

March, XCII, No. 3, pp. 301-456

35 Chronic Intestinal Stasis. W. A. Lane.
36 Radiations and New-Growths. W. S. Lazarus-Barlow.
37 *Sprains and Strains of Knee-Joint. G. L. Cheatle.
38 Treatment of Fractures by Direct Extension of Fragments. C. Woodward.
39 *Brachial Neuritis. C. M. H. Howell.
40 Diagnosis of an Acute Abdomen. A. Carless.
41 Subacute Infective Endocarditis. T. G. Moorhead.
42 Recent Advances in Clinical Pathology. W. D. Emery.
43 Work on Vaccine Therapy. A. Fleming.
44 "Myalgia," or Muscular Rheumatism. W. H. Kesteven.
45 *Attempt to Evaluate, on a Physiologic Basis, Some Current Methods of Treating Acute Pneumonia. E. Curtin.
46 Morphinomania. W. K. Anderson.
47 *Thermoprecipitin Reaction in Diagnosis of Pulmonary Tuberculosis. E. T. Fraser.
48 Relation of Time of Day to Mortality. E. Billing.
49 Case of Rat-Bite Fever Treated with Intravenous Injection of Neosalvarsan. A. K. Dalal.

37. Sprains and Strains of Knee-Joint.—In the acute case, where a severe sprain has occurred for the first time, and in which no rupture of the ligamentum patellae has occurred, Cheatle says the limb must be rested for about twenty-four hours, not necessarily in a splint—a thick layer of cotton wool and a bandage is often quite sufficient. If it is seen within the first five minutes, cold might arrest the hemorrhage. After the first half hour, it is best to apply to the articulation hot and frequent fomentations. At the end of twenty-four hours gentle massage can be applied to the thigh muscles and the articulation and passive movements can be begun. In performing passive movements, it is essential that the patient should help the surgeon in every movement. The patient's muscles will then be acting with and not against the surgeon, and there will be no fear of excessive movement.

In a very severe sprain, this treatment should be continued for three or four days, when the patient can begin to walk. At the end of a week massage of the muscles and joint can be continued, and he should perform regular muscular exercises, in one of three ways—by the method of resisted exercises, by means of a weight and pulley attached to a wall, or with the use of Cheatle's dumb-bell. He should begin to exercise his knee-joint and thigh muscles. The exercises may make the joint a little painful and even make it swell a little more, but he should go on with them and apply hot fomentations when these complications arise.

In the chronic case, in which sprains of the knee are of frequent occurrence and easily induced seen for the first time, the muscles will be found atrophied, to a marked degree, and any attempt on the part of the patient to use his joint will cause constant recurrence of fluid and pain, until, under proper treatment, his muscles regain their normal size and tonicity.

At this stage splints and bandages are useless. The patient must put no weight on the limb, except for ordinary necessities of life, for three weeks, and must perform regular specified exercises with a weight and pulley, or the foot dumb-bell. These exericses are more useful than massage of joint and muscles, but it may be continued. Unless regularly performed, the specified exercises are useless. After three weeks' work, the patient may take gentle walking and running exercises. After six weeks he can, as a rule, begin to do extra work, such as tennis, riding or golf, all in easy stages, and to stop on this side of fatigue, but the regular exercises must be continued for at least a year. The exercises are devoted mainly to the improvement of the flexors and extensors of the knee.

39. Brachial Neuritis.—For pain, especially that associated with rheumatic or gouty cases, the following mixture is recommended by Howell: ℞ Antipyrin, gr. v-x; sodium salicylate, gr. x; caffein citrate, gr. v; aromatic spirits of ammonia, ℥ ss; chloroform water, ad ℥ ss. For the arteriosclerotic cases a mixture containing nux vomica and potassium iodid is often

very effective. Aceto-salicylic acid, gr. xv, is often very useful in the milder cases.

Kataphoresis Howell has found of the very greatest use in relieving pain and shortening the attack in cases of rheumatic or gouty origin. The drugs introduced are either 2 per cent. sodium salicylate or iodin. For the former the kathode is used, for the latter the anode. It is preferable to have the arm treated by hot air or hot compresses before ionization is begun; the object of this is to get the skin thoroughly moist, thus enabling large currents to be used painlessly, whereby the entrance of the iodin or salicylic acid ions is facilitated. The limos should be kept warm by being wrapped in wool and the weight of the arm supported by a sling.

Should muscular weakness and wasting occur, it is of the utmost importance that the paralyzed muscles should not be stretched either by the weight of the limb or by contraction of their antagonists. This is prevented by putting the limb in a light splint, one made of celluloid being quite suitable for the purpose. The nutrition of the muscles must be maintained by massage and the use of the electric current, in the form of galvanism or faradism, according to the response obtained from the muscles on testing with one or the other.

45. **Treating Acute Pneumonia.**—The formation of fibrin, in Curtin's opinion, enhances the danger and should, if possible, be controlled or limited. With this end in view the salts of potash and ammonia are indicated early in the disease. The citrates and iodids of potash are especially useful, owing to their action in reducing the apoplasmic state of the blood. They also promote diuresis by abstracting water from the tissues into the blood-stream, thereby tending to diminish edema by draining off any excess of water from the tissues.

47. **Thermoprecipitin Reaction in Diagnosis of Pulmonary Tuberculosis.**—Eighty-six sputa were examined by Fraser; 42 were definitely tuberculous and 39 were non-tuberculous (clinically and bacteriologically); 5 were of doubtful diagnosis. Of the 42 tuberculous sputa, 36 gave a positive reaction, that is, 86 per cent. Of the 39 non-tuberculous sputa, 27 gave a negative reaction, that is, 69 per cent.; 1 gave a doubtful reaction. Of the 5 cases of doubtful diagnosis, 4 gave a positive and 1 a negative reaction. In 5 cases which were definitely tuberculous, but where no tubercle bacilli could be found in the sputum, a positive reaction was obtained. Fraser believes that the reaction appears to have some clinical value; a negative result speaks strongly against a diagnosis of tuberculosis.

Annales de Gynécologie et d'Obstétrique, Paris

February, XLI, No. 2, pp. 65-128

50 Hysterectomy without Opening the Uterus to Deliver Living Child. R. Casalis and R. Lecocq.
51 Changes in the Blood in Anemia from Obstetric Hemorrhage. V. Wallich and P. Abraml.
52 *Trendelenburg Position to Arrest Obstetric Hemorrhage. G. Fieux.
53 *Fate of Grafted Ovaries. (Etude anatomique de quatre greffes ovariennes chez la femme.) T. Tuffier and Vignes.
54 Inflammation as Factor in Cystic Disease of the Breast. (Histogénèse de la maladie kystique du sein.) P. Masson.
55 Early Embryonal Development of Hypogastric Plexus and Its Ganglion. Villandre.

52. **Trendelenburg Position to Arrest Threatening Obstetric Hemorrhage.**—Fieux applied this measure to combat symptoms of ischemia of the brain in a case of profuse obstetric hemorrhage, and found that it not only improved the circulation in the brain, but arrested at once and permanently the tendency to hemorrhage. Since then he has applied it systematically in four other cases, improvising a support for the purpose by working a chair, face down, under the mattress, the back of the chair under the patient's back. He gives a diagram to show the mechanical effect of the change to this position. The blood which has accumulated in the uterus and vagina falls back by its own weight when the pelvis and thighs are thus abruptly elevated, and this heavy column of blood acts as a tampon to plug the bleeding surface, the source of the hemorrhage, while its sudden impact is liable to start up normal uterine contractions. Even when the uterus develops atony again, the hemorrhage does not start up anew, as it is usually a vein that is bleeding, and in this position the pressure in the veins is reduced to zero even in the vena cava.

53. **Engrafted Ovaries.**—Tuffier and coworkers describe the histologic findings in four ovaries that had been transplanted years before and were removed at another operation or after death. Of the twenty women treated by transplanting of ovaries, nineteen menstruated thereafter for a few months, some for three or five years. The clinical course in these cases confirms the assumption that the disturbances of the menopause are not due to the loss of the internal secretion of the ovaries, but to the suppression of menstruation, that is to say, to the loss of the concerted action of the genital gland and the uterine mucosa. They state that since 1906, 141 women have been treated by ovary grafting with or without removal of all or part of the uterus, but they do not go into further details.

Annales de Médecine, Paris

February, I, No. 2, pp. 129-252

56 Experimental Superinfection with Tuberculosis in the Guinea-Pig. (Etude des phénomènes allergiques cutané et pulmonaire.) F. Bezançon and H. de Serbonnes.
57 *Classification of Diabetes Mellitus. M. Labbé.
58 Meningeal Hemorrhage in Purpura. G. Guillain.
59 Primary Splenomegaly with Cirrhosis of the Liver. (Maladie de Banti et anémie splénique.) M. L. Kindberg.
60 Tubercle Bacilli in the Blood of No Importance for Diagnosis, Prognosis or Prophylaxis. L. Bernard and Others.

57. **Classification of Cases of Diabetes.**—Labbé says that the old distinction of "fat" and "thin" diabetes, although not strictly scientific, yet harmonizes better with the clinical phenomena than anything else he knows. The diabetes may be accompanied by insufficient assimilation of nitrogen, in which case the glycosuria is both alimentary and organic and the sugar is derived from carbohydrates, albumin and fat. When the assimilation is normal, the glycosuria is derived from the carbohydrates, while in the cases between these extremes, the denutrition is moderate and can be compensated for in the food. He gives the details of several cases of these three types of diabetes without and with denutrition and the intermediate cases, tabulating the metabolic findings with all the particulars. They confirm anew his contention that diabetics not only lose an abnormal proportion of nitrogen, but that the metabolism of nitrogen is abnormal. Diabetic coma is the direct result, he says, of this *trouble du metabolisme azoté.*

The majority of diabetics remain in the stage of abnormal sugar regulation alone, while others pass rapidly into the stage of nitrogen denutrition. The danger in the former is from accumulation of sugar in the organism, with hyperglycemia and its symptomatic train of evils. The danger in the other is from progressive debility from the nitrogen denutrition, in addition to the danger from the hyperglycemia, and the resulting acidosis. All that is necessary in the first type is to combat the hyperglycemia by reducing intake of carbohydrates and the ration in general. In the other type, the nitrogen denutrition must be combated with abundant food, warding off acidosis by substituting vegetable albumin for animal albumin. The danger from impending acidosis is so much greater than that from the hyperglycemia, that the latter has to be disregarded in this stage.

Annales de Médecine et Chirurgie Infantiles, Paris

March, XVIII, No. 5, pp. 141-172

61 Sugar Aids Digestion of Raw Milk. (Influence du sucre pour l'utilisation physiologique du lait cru par le nourrisson.) G. Variot and L. Monod.
62 Coal Tar in Treatment of Eczema. G. Thibierge.

Archives des Maladies du Cœur, etc., Paris

March, VII, No. 3, pp. 161-224

63 Nervous Phenomena with Extrasystoles. (Accidents vertigineux ou syncopaux liés à l'extrasystolie auriculaire.) L. Gallavardin.
64 Audible Signs of Heart Block. (Contractions auriculaires perceptibles à l'oreille dans le block total. Leur signification comme galop du block.) L. Gallavardin.
64 Bigeminal Pulse from Atropin in Arythmia from Extrasystoles. Rythme coupié provoqué par l'atropine.) D. Danielopolu.
66 Bigeminal Pulse from Sodium Salicylate. D. Danielopolu.

Archives Générales de Chirurgie, Paris

February, VIII, No. 2, pp. 129-256

67 Rupture of Tendon in Connection with Joint Disease without Effusion. (Rupture intracapsulaire du tendon du long biceps brachial.) J. Flèvez.

68 *Pus in Double Uterus or Vagina. (Pyométrie et pyocolpos dans les cas de duplicité du canal génital.) C. Moreau.
69 *Primary Curvature of the Spine in the Neck Not Due to Trauma or Tuberculosis. P. Mauclaire.

68. **Suppuration in Double Uterus or Vagina.**—Moreau calls attention to the puzzling cases of retention of blood, secretions or pus in a walled-off part of the uterus or vagina owing to biseptus, arcuatus, bicornate, bipartitus or other unsuspected deformity of the uterus or vagina. He reports the case of a woman who had had an extremely fetid vaginal discharge for six years, ever since her marriage. There were occasional periods of pain, and during these spasms the discharge was less profuse. The pain was sometimes so severe that morphin was required, and it always localized in the lower abdomen, toward the right side. The discharge amounted at times to a glassful of pus during the day. The pus did not come from the uterine cervix, but oozed from a crevice in the depths of the vaginal culdesac on the right. No relief had been obtained from two previous vaginal operations, but a laparotomy revealed the cause of the trouble to be suppuration in the smaller part of a double uterus, the other half being sound. The minute crevice seen in the vagina from which the pus oozed must have been the only communication between this portion of the bifid uterus and the vagina. He adds from the literature the brief details of sixteen similar cases of pyometra or pyocolpos in a duplex organ, all the patients being cured by a more or less complete hysterectomy or other operative measures as indicated.

69. **Non-Traumatic and Non-Tuberculous Curvature of the Spine in the Neck.**—Mauclaire has encountered two of these cases, one in a boy of 17. The curvature developed in the course of a month, without pain or tenderness; the spine seemed to be twisted on itself and there were signs of paraplegia. The diagnosis by exclusion was deforming rheumatism limited to this portion of the spine, which was also the presumptive diagnosis in the second case. This patient was a man of 45 without pathologic past. No benefit was derived in this case from plaster casts, and the condition has persisted about the same for two years. In the younger patient a plaster cast with neckpiece prevented further curvature and gradually the condition improved, the symptoms of paralysis subsiding. It is important, of course, that these orthopedic appliances should be applied at the earliest possible moment in such cases.

Archives Générales de Médecine, Paris

February, XCIII, No. 2, pp. 101-192

70 Industrial Dust as Factor in Bronchopulmonary Disease. F. Helm and E. A. Lafont.
71 Nascent Iodin in Ear and Throat Work. (L'enfumage iodé en oto-rhino-laryngologie.) A. Maurice.

Archives Mensuelles d'Obstétrique et de Gynécologie, Paris

February, III, No. 2, pp. 161-256

72 *Autografts of Human Ovaries. de Rouville.
73 Causes of Abnormal Embedding of Ovum. (Etiologie des grossesses tubaires.) L. Schil.
74 Obstetrics in Northwest Europe in Eighteenth Century. (Mathias Saxtorph et ses contemporains.) E. Ingerslev.

72. **Transplanted Ovaries.**—De Rouville summarizes nine cases of various gynecologic affections which he treated by transplanting one or both ovaries into the abdominal wall; he tabulates the details finally for comparison. Actual benefit seems to have been realized only in one case, dubious in another, and good but briefly transient in a third. All the grafts became atrophied sooner or later. Notwithstanding these meager results he is confident that the principle is a good one and that perfected technic will improve the results. He noted in some cases that the engrafted ovary became swollen, tender and painful at the periods corresponding to the dates of the menses, these changes commencing as a rule from five to twelve days before the appearance of the menses. In six cases menstruation returned, but it was very irregular in some and ceased completely after a single menstruation in one case thirteen months after the ovary had been transplanted and after five months in another. Symptoms of the artificial menopause were apparent in all, but very mild, and milder in those whose menstruation continued.

Bulletin de l'Académie de Médecine, Paris

February 24, LXXVIII, No. 8, pp. 271-295

75 Gunshot Injuries of Vessels and Nerves. (Les anévrismes et les blessures des nerfs en chirurgie de guerre.) Laurent and E. Delorme.
76 Experimental Surgery of the Heart Valves. T. Tuffier.

Bulletins de la Société de Pédiatrie, Paris

February, XVI, No. 2, pp. 73-116

77 Vaccine Therapy of Typhoid. J. Comby.
78 Scapular Tic. N. Wilbouchewitch.
79 Sugar Aids Digestion by Infants of Raw Milk. G. Variot and L. Monod.

Journal de Chirurgie, Paris

February, XII, No. 2, pp. 145-280

80 Operation on Costal Cartilage to Mobilize Chest Wall. (Chondrectomie mobilisatrice dans les déformations thoraciques accompagnées de troubles respiratoires.) C. Lenormant.
81 *Tuberculosis of Costal Cartilages. S. Mercadé.

81. **Tuberculosis of Costal Cartilages.**—Mercadé reports six cases of a cold tuberculous abscess in a costal cartilage, and gives an illustrated description of the technic with which he successfully removed the part affected. The patients were men between 35 and 60 and one woman of 25. The abscess did not develop downward, but worked forward through the interstices between the muscle fibers. When the tuberculous process assumes the form of a diffuse infiltration, differentiation is difficult; in one such case the trouble had been diagnosed as a diaphragmatic pleurisy. After the operation the patient must be examined carefully every second day to learn whether there is not an accumulation of serous fluid and blood if the operation required cutting into bone tissue. The lips of the U flap can be separated a trifle and the fluid squeezed out and then resutured. This is sedom required more than once or twice at most.

Journal de Médecine de Bordeaux

March, LXXXV, No. 9, pp. 141-152

82 Sarcoma of the Thyroid. Chavannaz and Loubat.
83 Arrest of Traumatic Glaucoma in Girl of 12 by Trephining Eyeball. (Buphtalmie secondaire traitée par la trépanation d'Elliot.) H. Fromaget.

Lyon Chirurgical

March, XI, No. 3, pp. 221-312

84 More Frequent Use of Gastrectomy Recommended for Gastric Ulcer. X. Delore and P. Sauty.
85 *Resection of the Auriculotemporal Nerve to Inhibit Parotid Secretion. G. Algrot.
86 *Surgical Aspects of Aerophagy. R. Leriche.

85-86. **Aerophagy: Dangers and Treatment.**—Leriche regards the swallowing of air as a frequent cause of acute postoperative dilatation of the stomach and therefore important from a surgical standpoint. It may also cause chronic dilatation of the stomach and lead to a mistaken diagnosis of gastric ulcer. It has always been regarded as a tic or a form of hysteria, but he believes it is often due to excessive salivation, and is therefore susceptible of surgical treatment. If the secretory fibers supplying the parotid in the auriculotemporal nerve are cut, the hypersalivation and with it the swallowing of air are ended. He describes a case in which he successfully performed this operation. In the preceding article Algrot also describes a successful operation of the same sort for the same reason.

Lyon Médical, Lyons

March 1, XLVI, No. 9, pp. 453-520

87 Müller's Method of Determining the Degree of Hypertrophy of the Right Heart in Chronic Pulmonary Disease. J. Bret.
88 *Ether Dressings in Gynecology. R. Condamin.

88. **Ether Dressings.**—Condamin recommends the application to the abdomen in inflammatory edema of the pelvis, subacute phlegmon, and similar conditions, of cotton pads saturated with ether and covered with more cotton and oiled silk. These ether dressings have a sedative action, reduce pain and the absorption of edema is promoted. An ether tampon may also be applied inside the vagina, but this is somewhat painful. He has been using for several years these ether-soaked compresses over a large area, and with constantly increasing satisfaction. The ether has to be continuously applied and in no small dosage.

Revue Pratique d'Obstétrique et de Gynécologie, Paris

February, XXII, No. 2, pp. 33-60

89 Pelvic Neuralgia of Genital Origin in Women and Treatment by Mineral Waters. M. de Lépinay. Concluded in No. 3.
90 Ovarian Tumors Interfering with Delivery. P. Puech and J. Vanverts.
91 Phenomena of Shock after Normal Delivery. Fabre and Bourret.

Presse Médicale, Paris

XXII, Nos. 17-19, pp. 161-192

92 Influence on Heart Action of Pressure on the Eyeball, of Nitrite and Atropin. (Diagnostic des bradycardies totales d'origine nerveuse. L'automatisme ventriculaire provoqué par la compression oculaire et l'atropine dans les bradycardies totales.) M. Ketzetakis.
93 Operations on Heart Valves. (Etude anatomo-pathologique et expérimentale sur la chirurgie des orifices du cœur.) A. Carrel and T. Tuffier.
94 Protozoa in Human Pathology. L. Lagane.
95 Gastric Cancer of Intestinal Type. R. Grégoire and P. Masson.
96 Subperitoneal Nephrectomy through Transverse Incision in Front. L. Bazy.

Semaine Médicale, Paris

March 4, XXXIV, No. 9, pp. 97-108

97 Hysterectomy Sparing the Ovaries. R. de Bovis.

March 11, No. 10, pp. 109-120

98 *Large Syphilitic Tumors of the Liver. F. Lejars.

98. Large Syphilitic Tumors in the Liver.—Lejars relates from his own experience and that of others a long series of cases in which the symptoms indicated gall-bladder or stomach or duodenum disease or cancer in the liver, but which proved to be merely an isolated syphilitic lesion. Even when syphilis is known, there is, of course, the possibility that any of the above may be associated with it, so that an exploratory operation is often justified. This is especially necessary as tentative specific treatment might be directly injurious with gastric malignant disease. Another argument in favor of an exploratory operation is that it may be possible to break up adhesions, etc., causing functional disturbance. Syphilitic tumors in the liver may interfere with the functioning of the whole biliary apparatus and may induce inflammation in adjoining tissues. If the syphilitic tumor is found pedunculated and easily removable, and not much benefit has been derived from specific treatment, it is well to consider the advisability of removing it, but unless conditions are exceptionally favorable this had better not be attempted. In the cases in which it has been done the gumma generally had been mistaken for a cancer.

The syphilitic tumor is liable to project downward or backward, and in several of the cases related the operation was done from the rear for a supposed wandering and painful kidney. In one case even when the liver was opened up, the trouble was taken for gastric cancer spreading to involve the liver. The bright side to all these mistakes in diagnosis is the almost invariable complete recovery under specific treatment. Some of the patients improved under the influence of the operation alone. This improvement refuted the presumptive diagnosis of inoperable cancer, and a supplementary course of treatment for syphilis speedily completed the cure. In some of the cases the Wassermann reaction was negative but the patients recovered under specific treatment as effectually as those giving a positive response.

Beiträge zur Klinik der Tuberkulose, Würzburg

XXX, No. 1, pp. 1-226. Last indexed March 21, p. 972

99 *The Leukocytes and the Viscosity of the Blood. A. Gullbring.
100 *Pleural Eclampsia. (Zur Pathogenese der pleuralen Eklampsie bei Anlegung eines künstlichen Pneumothorax.) W. Orlowski and L. L. Fofanow.
101 *Albumin in the Sputum. (Die quantitative Eiweissbestimmung im Sputum.) O. Melikjanz.
102 Comparison of Different Tuberculins. Holten and V. Kollert.
103 *Tuberculous Pericarditis. W. Wolff.
104 *Study of Tuberculosis Death-Rate. (Vergleichende Untersuchung über Tuberkuloseverbreitung in zwei verschiedenen Bezirken Badens.) K. Dörner.
105 Serodiagnosis of Tuberculosis. (Erfahrungen mit dem Abderhaldenschen Dialyslerverfahren bei der Tuberkulose.) F. Gumpertz.
106 Inunctions of Attenuated Tuberculin for Wholesale Treatment and Prophylaxis for Tuberculosis. (Ueber eine Vereinfachung der spezifischen Therapie für die spezifische Tuberkulose-Bekämpfung in grösserem Stil.) Petruschky.

99. The Leukocytes Bear Some Relation to the Viscosity of the Blood.—Gullbring reports extensive research the results of which show that there is a regular ratio between the number of the polymorphonuclear leukocytes and the viscosity of the blood, the latter increasing as the number of these cells grows larger. Sixty-six pages are devoted to the details of his tests in 201 patients, tabulated under various headings, as also the findings in ten cases after injections of sodium cinnamate and thirteen others after injection of other drugs, also in eleven syphilitics, and in some patients with nephritis, exophthalmic goiter, leukemia or pernicious anemia, and after injection of gelatin and on different diets. Gullbring compares his findings with those of other investigators, and concludes with a bibliography of eighty-five titles.

100. Threatening Disturbances During Artificial Pneumothorax.—This communication from Kasan relates that during injection of the gas to make an artificial pneumothorax in a woman of 26 a train of symptoms developed such as have been described in the literature as reflex pleural eclampsia. They included convulsions, unconsciousness, repeated vomiting, dilatation of the pupils and disturbances in respiration and circulation and paresis of certain groups of muscles. These phenomena indicate a sudden increase in the pressure on the brain with traumatic injury of certain nerve terminals, so the trouble undoubtedly must be due to some organic disturbance in the brain. Only embolism of the cerebral vessels can explain it, and he thinks that the embolism was probably of the gas. The woman recovered, but two months later there was still some paresis. It is possible that abortive forms of such phenomena may be of a reflex nature, especially those with laryngospasm, slowing of the pulse, vertigo, pallor, etc., but when there is even transient paresis, gas embolism with minute amounts of gas seems the more probable explanation.

101. Albumin in the Sputum.—Melikjanz calls attention to the diagnostic importance of quantitative estimation of the albumin in the sputum, applying the Heller test and watching the interval before the albumin ring appears. He gives the technic for this quantitative method and the findings in fifty patients repeatedly examined. It shows active pulmonary tuberculosis even in the incipient stage, and the fluctuation in the amount of albumin runs parallel to the healing process or the aggravation of the disease. The specific gravity of the sputum is independent of the amount of albumin and character of the pulmonary disease.

103. Tuberculous Pericarditis.—Wolff gives the details of 21 cases with necropsy in all but 5; 8 patients were over 60, and the tuberculous pericarditis was not accompanied by any other tuberculous affection or merely by signs of old healed processes in the apices. The patients under 60 all had other tuberculous affections. In 5 cases the pericarditis had caused no symptoms during life. The necropsy findings are liable to be misunderstood by those without much experience in this line. A tuberculous origin should be suspected in all cases of fibrinous pericarditis in the elderly not to be explained in other ways. The prognosis is not absolutely bad; it may heal by the growing together of the sheets of the pericardium with the eventual calcification of the synechia.

104. Comparative Death-Rate from Tuberculosis in Two Baden Districts.—Dörner has been studying conditions before and after the industrial development of two large districts with a population of about 20,000 each. The data are presented in a dozen tables; all testify anew to the way in which tuberculosis is fostered by unfavorable environments, and that women feel the effect of this more than men. Also that the campaign against tuberculosis in children is the most important means to reduce the general death-rate among them.

Berliner klinische Wochenschrift

March 2, LI, No. 9, pp. 385-432

107 Experimental Research on Small-Pox Virus. (Mitteilungen über experimentelle Vaccine.) H. A. Gins.
108 Doughy Infiltration of Mucosa of Urethra and Bladder as Symptom of Thyroid Insufficiency. (Zur Diagnose der Hypothyreose.) H. Stern (N. Y.).
109 The Blood in Diabetes. (Morphologische Eigenschaften des Blutes bei Diabetes mellitus.) M. Halpern.

110 *Technic for Feeding Children Unusually Large Numbers of Calories. (Mastkuren im Kindesalter.) S. Engel.
111 Serum Sickness. C. R. Schulz. Commenced in No. 8.
112 Cotton Dressings. (Moderne Verbandwatte.) W. Zänker and K. Schnabel.

110. Extra Nourishing Food for Children.—Engel places great reliance on cream in the forced feeding of children, as this supplies large amounts of calories in a concentrated form. He estimates that half a liter of 15 per cent. cream represents 800 to 900 calories. The secret is to have the daily ration of cream taken all at one time. During the day the child is fed as usual, but two or three hours after supper, when the child is already in bed, he drinks the glass of cream, and takes it with relish. A boy of 10, for example, requiring about 1,250 calories, can take half of them in this form. Repose is an indispensable factor in assimilation and utilization of the maximum proportion of nourishment but this is too often neglected in the forced feeding of children. They should recline all the time or at least three or four hours, all preferably out of doors. Nervous, restless children can be kept in a darkened quiet room; if this alone does not suffice, he does not hesitate to give some mild sedative during the first day or so.

Correspondenz-Blatt für Schweizer Aerzte, Basel

February 28, XLIV, No. 9, pp. 257-288

113 Fertilization and Embedding of Human Ovum. (Einiges über Befruchtung und Einbettung des menschlichen Eies.) H. Mayer-Ruegg.

March 7, No. 10, pp. 289-320

114 Recent Progress in Our Knowledge of Infections. (Erforschung der Infektions-Krankheiten.) W. Silberschmidt.
115 Chronic Malaria. F. Schwyzer.

Deutsche medizinische Wochenschrift, Berlin

February 26, XL, No. 9, pp. 417-472

116 *Treatment of Hemoptysis. (Lungenblutung.) Grober.
117 Eugenics and Gynecology. J. Veit.
118 Successful Removal of Tumor in the Pancreas. W. Körte.
119 Ferments in the Blood. (Blutfermente des gesunden und kranken Organismus und ihre Bedeutung für die Physiologie und Pathologie.) L. Pincussohn.
120 Reply to Article Asserting Serodiagnosis of Pregnancy is Neither Specific nor Reliable. E. Abderhalden and L. Michaelis.
121 Diphtheria in the School. A. Gottstein.
122 Specific Potassium-Gold Cyanid Reaction in Serum in Syphilis and Cancer. E. Wiener and A. v. Torday.
123 *Simple Quantitative Test for Urea in Urin. A. Hahn and J. Saphra.
124 *Compound Splintered Fracture of the Skull. (Zur Behandlung komplizierter Splitterbrüche des Schädeldaches.) E. Görs.
125 Prostatectomy by Wilms' Technic. D. Kulenkampff.
126 *Syphilis an Internal Disease. K. Stern. Commenced in No. 8.

March 5, No. 10, pp. 473-520

127 Treatment of Cholera Infantum. (Behandlung des akuten Brechdurchfalls der Säuglinge.) Tobler.
128 Etiology of Catarrhal Enteritis in Infants. (Säuglingsdarmkatarrh.) K. Baerthlein and W. Huwald.
129 *Internal Disinfection. R. Roosen.
130 *Detection of Metals in Organs. (Methode zum Nachweis feinster Metallablagerungen in den Organen.) J. Voigt.
131 Biologic Research with Colloidal Silver. J. Voigt.
132 *Deviation of Complement with Chemicals. K. Hara.
133 Bile in Culture Medium. (Zusatz von Rindergalle zum Löfflerschen Diphtheriennährboden.) E. Bössing.
134 Biologic Research on Tuberculin. (Experimentelle Untersuchungen über Tuberkulin und Tuberkulose.) H. Aronson.
135 Tubercle Bacilli in the Blood. C. Moewes and E. Rautenberg.
136 Improved Technic for Bang's Test for Sugar in the Blood. N. Roth.
137 Paratyphoid Epidemic Traced to Flour. H. Langer and Thomann.
138 Care after Operation for Pyloric or Duodenal Ulcer. F. Ehrlich.
139 *Death in Consequence of Administration of Friedmann's Remedy for Tuberculosis. (Ein Todesfall infolge von Anwendung des Friedmannschen Tuberkulosemittels.) O. Vulpius and C. Laubenheimer.

116. Hemorrhage from the Lungs.—Grober says that the mere aspect of the blood will generally reveal where it comes from; if from the gums, there is no coagulation and it is diluted with saliva, and if from the nose or throat, mucus comes with it. Blood from the lungs is usually thoroughly mixed with the sputum and is bright red and foamy. When this is swallowed and then vomited, fresh foamy blood generally comes with it, showing that it is not true hematemesis. To keep the body absolutely and constantly still is the first and main indication, and he insists that the patient should be kept in bed for a week or ten days after actual hemoptysis, even if there are no other symptoms. Provision must be made for the escape of the blood to ward off danger of suffocation; he lost two patients from this cause, children of 9 and 12. This danger is imminent when the patient is asleep or unconscious, and this should be remembered when giving sedatives.

The patient often imagines the amount of blood lost as far above what it really is; he must be tranquilized at all costs, and all persons that cannot be relied on must be excluded from the room whether the hemorrhage was slight or severe.

The family can be reassured that with tuberculosis hemoptysis is extremely rarely directly fatal. The patient should not speak, but use pencil and pad; sign language is liable to be misunderstood and excite him still more. Strapping the chest and sand bags may do more harm than good, but an ice bag or its equivalent soothes and steadies. It should be suspended to relieve the chest of its main weight. Inspection of the skin of the chest and the local sensations may reveal the site of the bleeding. The patient should not be disturbed for a thorough examination. The food should not require chewing, and if even swallowing is dangerous, a scrap of ice can be placed in his mouth, possibly dropping a little lemon juice on it. The water from the melting ice can run out of the mouth. Milk and sweetened water and the blood that may have been swallowed help to nourish the patient. Stimulants, alcohol, coffee, tea, should be scrupulously avoided and for some time afterward. Heart tonics tone up the circulation and thus may start up the hemorrhage. He has had this occur twice under digitalis. Some coughing is indispensable to expel the blood from the bronchi even although it brings the danger of starting up the hemorrhage anew. Ergot, hydrastis and atropin have each rendered him good service, and he knows of three cases in which a tablespoonful of salt dissolved in a little water arrested pulmonary hemorrhage, twice in one case, but he has never given it himself. He has also witnessed a similar effect from intravenous injection of 5 and 10 c.c. of a 5 or 10 per cent. solution of salt. No means is known to act directly on the bleeding spot, but a subcutaneous injection of reliably sterilized gelatin seems the nearest approach to this at our disposal, and there is more general confidence in this than in any other styptic.

123. Test for Urea in the Urine.—Hahn and Saphra found extremely reliable Marshall's simple method to determine the proportion of urea in the urine. The alkalinity of the urine is first ascertained; then a certain ferment is added and the alkalinity is determined anew after a certain interval. The difference between the two figures is the index. The ferment is derived from the soy bean.

124. Splintered Fracture of the Skull.—Görs reports seven cases in which the skull had been extensively fractured; in six he patched the defect by reimplanting the pieces of bone, and they healed in place without inflammation. All the patients regained their former earning capacity and there were no epileptiform seizures in any instance. Two patients were boys of 12 and 16; the others men of 20, 28 and 42 to 71. The injury could be treated at once and there was no infection except in one case in which serious meningitis had already developed, to which the patient succumbed after removal of the foreign body and drainage. The gaps in the skull ranged from the size of a silver quarter to that of the palm of a man's hand. The frontal bone was involved in four, the vertex in three. Brachial monoplegia had already developed in two of the latter group.

126. Long Latent Stage in Syphilis.—According to Stern's experience, in fully 50 per cent. of all cases of syphilis, the disease develops without any secondary manifestations; that is, the syphilis runs its course exclusively as an internal disease after the primary lesion. This is equivalent to saying that less than 50 per cent. make any attempt to get proper treatment, as it is generally the skin and mucosa affections which drive syphilities to the doctor. The absence of external manifestations may therefore be regarded as a misfortune, especially if we regard them as protective reactions. No history of secondary manifestations can be found in a large

proportion of the cases of tabes and paralysis. The fact that the syphilis gives no signs of its presence during long years after the primary chancre is by no means a sign that the syphilis has been "cured."

129. **Internal Disinfection.**—Roosen relates encouraging results in series of mouse tumors which melted away, as it were, under the influence of subcutaneous or intravenous injection of methylene blue, followed forty-eight hours later by a subcutaneous injection of calomel. In his latest series, sarcomas and carcinomas as large as a bean or nut subsided completely in sixteen of the seventy mice. The tumor softened up more or less in all the animals. The aim is to give the mercury only when the methylene blue which has not entered into combination with the tissues has been expelled from the body. The tint of the urine will show when it is being cast off.

130. **Determination of Finest Particles of Metal in Tissues.**—Voigt says that important information in regard to the presence of metals in organs can be obtained with the ultramicroscope applied to sections. The particles catch the light in a different way and show up distinctly.

132. **Chemicals for Antigens in Biologic Tests.**—Hara obtained positive responses with the deviation of complement test in 48 of 56 cancer cases using phenolphthalein for the antigen. In 86 cases with positive Wassermann reaction the tests with this chemical and also with maltose were constantly negative. The tests with these two substances were also applied to 385 patients with various other affections and only 4 positive responses were obtained with maltose and 8 with phenolphthalein. Maltose is not quite as specific as the latter, but either may serve as a useful control in applying the biologic test. Other chemicals were tried but none showed such efficacy as these two.

139. **Fatality Following Use of Friedmann's Remedy for Tuberculosis.**—This communication from Professor Vulpius and Privat-Docent Laubenheimer, both of Heidelberg, reports a fatality following application of Friedmann's remedy for tuberculosis, and states further that in only two out of thirteen ampules of the remedy examined was the turtle bacillus found in a pure culture. All the other ampules were contaminated with bacilli of different kinds, including a *Staphylococcus aureus* which proved very virulent on inoculation of animals. Forty-six patients had been given the treatment, the remedy obtained directly from the manufacturers, thirty-one by intramuscular injection; fifteen by both intramuscular and intravenous injection, all strictly according to Friedmann's directions. There was a febrile reaction in all except in one patient. In some the fever was high and the general phenomena were pronounced. One of the patients died and another was saved only by the greatest efforts and good fortune. This latter patient was a girl of 18 with a tuberculous process in the knee. After a pronounced reaction with fever, chills, headache and palpitations, severe collapse developed the third day but the patient gradually recovered.

In the fatal case the patient was a man of 31 with a tuberculous focus in the epididymis and ribs. The night after the *Simultan-Injektion* he had chills and fever to 41.2 C. —over 106 F.—and pulse of 140. Coma and death followed in less than forty-eight hours. The clinical course suggested acute sepsis with paralysis of the heart. In eight of the thirty-one patients given intramuscular injections, infiltration followed sooner or later, with a fistula which lasted for several weeks in a number of cases.

Vulpius began to apply this method of treatment last November, and states that the period of observation is still too short for a decisive judgment, but to date he has not witnessed in a single instance any change for the better which he can ascribe to the new remedy. The toxic phenomena in his cases and the high fever with the intramuscular plus intravenous injections are amply explained, he says, by the bacteriologic findings mentioned above. They warn of the necessity for extreme caution with the remedy. These findings, he adds, will deter him from ever injecting the remedy directly into the circulation again, or at least not until it is officially standardized.

Deutsche Zeitschrift für Chirurgie, Leipsic

February, CXXVI, Nos. 5-6, pp. 429-634

140 *Intracranial Injections of Alcohol in Trigeminal Neuralgia. F. Härtel.
141 *Family Tendency to Polyps in the Intestines. W. Thorbecke.
142 Invagination of the Intestine and Spastic Ileus. A. Fromme.

140. **Alcohol Injections for Neuralgia.**—Härtel's report of his experiences fills 123 pages, setting forth the details of twenty-five cases of severe chronic trigeminal neuralgia in which he injected alcohol to block the nerve just before it pierced the skull. He found it far more effectual than any procedure outside the skull, but states that while the results are on a par with those of gasserectomy, it is free from the dangers of the latter, although it shares with the latter the liability to consecutive inflammation of the cornea. This can be warded off, however, he says, by careful after-treatment. He adds that it is necessary to make the injection in such a way as to block the whole ganglion. Anatomic conditions interfered to prevent introducing the needle into the oval foramen in six of the eighty-two cases in which he has applied this technic for this purpose or for local surgical anesthesia or for diagnostic puncture of the base of the brain with meningitis or for intracranial injection of antitetanus serum. Care afterward to ward off keratitis should be particularly scrupulous with diabetics.

141. **Familial Polyposis.**—Thorbecke has encountered 3 cases and has compiled 19 from the literature since 1908. This brings to 78 the number of cases of intestinal polyposis on record; 53 of the patients died, including 32 with cancer. The outcome is not known in 7 cases; 5 patients are known to be living. Treatment can generally be only palliative on account of the large number of polyps, as a rule. In the 10 cases in which the accessible polyps were cut off, 3 of the patients died; 2 had recurrence with malignant features four or six years later; 3 others were benefited, but only 1 patient seemed to be permanently cured. An artificial anus to relieve the gut below from irritation was made in 8 cases but 3 patients died and only slight and transient benefit was realized in the other cases. Injection of astringents gives but slight and transient relief if any.

Medizinische Klinik, Berlin

March 1, X, No. 9, pp. 357-400

143 *Calcium Given with Iodids and Bromids Wards Off By-Effects. E. Frey.
144 Duodenal Ulcer. C. Hart.
145 Roentgenoscopy in Gastro-Intestinal Disease. (Röntgendiagnostik der Verdauungskrankheiten in klinischer Bewertung.) A. Albu.
146 Thermopenetration. A. Laqueur.

143. **Prevention of Iodism and Bromism.**—Frey relates experiences which confirm the antagonistic action between calcium and the iodids and bromids. It can be instructively studied on muscle fibers, the latter drugs causing contractions in muscle fiber immersed in them while the contractions cease when calcium is added to the fluid. It seems wise, therefore, he says, to give the preference in therapeutics to calcium iodid and bromid.

Münchener medizinische Wochenschrift

March 3, LXI, No. 9, pp. 457-512

147 *Color Test for Uric Acid in Blood and Urine. (Ueber kolorimetrische Bestimmungsmethoden.) Autenrieth and Funk.
148 *Peptolytic Ferments in Cells and in the Blood. M. Mandelbaum.
149 *Specificity of the Protective Ferments. (Serologische Untersuchungen mit Hilfe des Abderhaldenschen Dialyserverfahrens bei Gesunden und Kranken. E. Lampé.
150 Sources of Possible Error in Abderhalden's Serodiagnosis. (Ninhydrinreaktion.) H. Deetjen and E. Fränkel.
151 *Serodiagnosis of Prégnancy. L. Flatow.
152 *Abderhalden's Dialysis Procedure. H. Kämmerer, M. Clausz and K. Dieterich.
153 Paratyphoid Epidemic from Eel Meat. (Fischfleischvergiftung durch Bakterien der Paratyphus-Enteritisgruppe.) R. Müller.
154 Amebic Cystitis. W. Fischer.
155 *Dysentery Epidemic in Children. E. Keuper.
156 *Treatment of Dysentery. W. Lutsch.
157 Local Anesthesia for the Eye. (Ueber lokale Anästhesie in der Augenheilkunde mit Novokain-Kalium Sulfuricum.) H. Gebb.
158 Therapeutic Application of Electricity to Entire Limb; Bergonié's Method. A. Veith.
159 Technic for Diazo Reaction. Welwart.

147. **Colorimetric Determination of Uric Acid in Blood and Urine.**—The simple points necessary to bear in mind in examining blood and urine for uric acid are emphasized, especially with the iodic acid and phosphotungstic acid methods. The former is the simpler technic and is better for the urine but only for the blood when there is over 4 mg. of uric acid in 100 c.c. of blood, which is usually the case in gout. According to the research of the writers, normal blood contains from 1 to 3 mg. of uric acid, and the blood of beeves and swine has about the same proportion, but in gout the proportion ran up to 5 mg. in one case.

148. **Peptolytic Ferments in the Cells and Blood.**—Mandelbaum's experiments and research have demonstrated, he says, that the cells retain the peptolytic ferments with extreme tenacity and only when the cell dies suddenly does the ferment escape into the blood. He asserts therefore that the glycyltryptophan-splitting ferment is thus merely a death reaction.

149. **Specificity of the Protective Ferments.**—Lampé reports extensive research which corroborates the specific nature of the protective ferments in various affections of different organs. He expatiates on the importance of the information that can thus be derived in distinguishing between thyroid intoxication and hysteria or tuberculosis, or between epilepsy and hysteria, etc. Far and above all in practical importance, he adds, is the serodiagnosis thus rendered possible in malignant disease and pregnancy.

151-152. **Unreliability of Serodiagnosis of Pregnancy.**—Flatow says that the dialyzing shells are frequently imperfect and hence the results of the Abderhalden method are liable to be incorrect. In addition to this, he states that conclusions based on the unknown proportion of the specific substance which dialyzes through the membrane of the thimble is a very vague and unscientific method of performing the test. By coagulating out this substance it can be obtained in its entirety, not merely the fraction which dialyzes out. He has coagulated out the substance with acetic acid and potassium oxalate while Michaelis and Lagermarck used colloidal iron for the same purpose. The coagulum was then dissolved with sodium bicarbonate and then the ninhydrin test was applied. With the specific substance thus obtained in its entirety, he continues, the serum from men as well as from pregnant women gave a positive response to placenta tissue. The proteolytic ferments of normal blood serum digest placenta tissue irrespective of whether the serum comes from men or women, pregnant or non-pregnant.

Kämmerer and his coworkers are from the same clinic (Munich) and cite Fried, Oeller, Stephan, Plaut and others who are unable to accept the specific nature of the protective ferments. They give the particulars of their own latest series of applications of the test, which confirm anew, they assert, the unreliable nature of the findings. When contradictory results are obtained with the dialyzing technic the assumption that they are all due to defective technic cannot be accepted when the technic has been so thoroughly mastered as is the case at the Munich clinic. It is certainly remarkable, they say, that a procedure based on such a simple theoretical principle gives satisfactory results only in the hands of a certain few. (Compare Baeslack's article in THE JOURNAL, March 28, 1914, p. 1002.)

155. **Dysentery in Small Children.**—Keuper reports the discovery of Kruse's pseudodysentery bacillus in nearly every one of the twenty infants and small children in the epidemic described at Frankfurt a.M. The period of incubation seems to be about four or five days, and the children may have the bacilli in the stools occasionally for months after all symptoms have disappeared. Strict and prolonged isolation is thus necessary to prevent infection of others. The symptoms simulated those of ordinary follicular enteritis. Two of the children who had apparently recovered from the affection and whose stools were found sterile on two examinations were returned to the ward after their isolation, but their isolation had not been long enough and they proved a source of infection for the other children. There was recurrence in five cases. A change of food seemed beneficial; possibly it modified the medium for the bacilli. Various drugs were used but none displayed any marked or constant efficacy, including emetin.

156. **Salicylic Enemas in Dysentery.**—Lutsch writes from Africa to extol Eichhorst's method of treating dysentery by rectal enemas of a 2 per cent. solution of sodium salicylate. The dose for an adult is 13 gm. sodium salicylate in 650 gm. water. The prompt relief of pain and tenesmus is remarkable, and Lutsch says that he feels now that he has dysentery entirely under his control. He gives 0.3 gm. calomel or a trifle more and allows nothing but barley water the first day and later a little boiled milk. Six hours or more afterward he gives the salicylate injection and repeats it the second and fourth or third and fifth days. After he became convinced of the benefit from the salicylate injections he applied them also in ordinary diarrheas and catarrhal bowel affections and with striking success. The enema must be of body temperature and retained for half an hour. For a child a year old he uses only 90 gm. of the salicylate solution. Eichhorst recommended ice water for the vehicle and ice bags, but Lutsch has always found body temperature and application of heat far preferable to cold for diarrhea of any kind.

Therapie der Gegenwart, Berlin

March, LV, No. 3, pp. 97-144

160 *Active Immunization Against Diphtheria. E. Schreiber.
161 *Treatment of Cystinuria. G. Klemperer and M. Jacoby.
162 *Radium Therapy of Cancer of Esophagus and Cardia. C. Lewin.
163 Cure of Rat Sarcomas with Autolysates. F. Blumenthal and C. Lewin.
164 *Prevention of Flat-Foot. (Zur Verhütung des Plattfusses in gewissen Berufen.) K. Gerson.

160. **Vaccination Against Diphtheria.**—Schreiber states that he has applied Behring's method of vaccination against diphtheria to more than 700 schoolchildren and Kissling to 300 children in the hospital. The intracutaneous seems the best route for the injection. The vaccine is a mixture of toxin and antitoxin, and thus it contains only traces of albumin so that there seems to be no danger of anaphylaxis from its use. No untoward by-effects were noted in any instance except a local reaction to the injection at times. Young children and babies give less of a reaction than older children and adults. The amount of antibodies produced in consequence of the injection seems to parallel the resisting powers and decline as the latter run out. Some respond to the vaccine with remarkable production of antibodies; in a few there seemed to be no response. Schreiber says that all the evidence to date sustains the assumption that a goodly production of antibodies protects against diphtheria infection. Persons who have much to do with diphtheria, physicians and nurses, gradually become insensibly immunized as their blood is found exceptionally rich in antibodies. As the antibodies develop only in response to actual diphtheric infection, the physicians and nurses must have acquired repeated mild infections to have developed antibodies to such an extent. The Behring system of two or three vaccinations aims to accomplish the same thing.

161. **Treatment of Cystinuria.**—Klemperer and Jacoby report the case of a woman of 27 who for years had suffered from paroxysmal pain in the kidneys. She had consulted numerous physicians and specialists on account of these kidney colics. After thorough examination, including the cystoscopic and roentgenoscopic, they had unanimously diagnosed the trouble as nervous pains until finally one discovered crystals in the sediment and recognized the shiny hexagonal flakes as cystin crystals. They dissolved readily in ammonia and could be precipitated out again by acetic acid. On a test diet it was found that the proportion of cystin in the urine became much reduced when the patient refrained from albumin in her food. The amount also dropped remarkably when she took an alkali. Not only the amount of sediment but the proportion of cystin present declined to traces and then to zero under the influence of from 6 to 10 gm. daily of sodium bicarbonate. This is the first time on record, Klemperer says, that by simply modifying the reaction, the intermediary metabolism has been

influenced at will. This experience shows that when the ordinary reaction of the blood does not permit the complete splitting of the cystin, this can be accomplished by merely rendering it a little more alkaline.

162. **Radium Therapy of Cancer of the Esophagus.**—Lewin summarizes twenty-five cases from his experience at Berlin and describes the technic which he has found most effectual. The results of the radium therapy with cancer here are far from the results achieved with uterine cancer, but still very great improvement was realized in a number of cases and one patient, a woman of 54, seems to have been actually cured by fifteen exposures from one to four hours long to 50, 80 or 100 milligrams of the radium in the course of four weeks. Roentgenograms before and after treatment showed finally the lumen of the esophagus of more normal width throughout; at first the cancer had encroached on it leaving less than a fifth permeable.

164. **Prevention of Flat-Foot.**—Gerson thinks that persons whose occupation compels them to stand much should take special pains to ward off flat-foot, and a simple and effectual means for this is to throw the weight of the foot more on the outer side of the foot. This relieves the tendons, ligaments and bones of the inner side so that they retain their shape and elasticity although the person may have to be on his feet all the time. This excessive use of the feet makes them perspire besides, and shoes or sandals should be worn which permit circulation of air. To keep the feet in slight supination he has an insole worn which is three quarters of a centimeter high on the inner side, from the toes to the heel, and it slopes gradually toward the outside, where it is only an eighth of a centimeter. This slope answers the purpose, sparing the complicated mechanism of the arch of the foot and throwing the weight on the stout outer edge. The insoles cause no annoyance, but he advises to wear them only while at work and take them off at other times. They have been found a great help by clerks, bakers, waiters, porters, women in laundries, and hospital and other nurses, in short, for all obliged to be much on their feet. An actual support for the arch does harm rather than good when the foot is normal. It is merely a question of preventing overstraining of the arch.

Wiener klinische Wochenschrift, Vienna

February 19, XXVII, No. 8, pp. 169-196

165 *Congenital Asthenia in Children. (Das schwache Kind.) B. Sperk.
166 Frequency of Apical Tuberculosis in Children. E. Sluka.
167 *Technic for Artificial Respiration. (Neue Methode der künstlichen Atmung.) G. E. Weinländer.

165. **Congenital Asthenia in Children.**—Sperk always tests for the facialis phenomenon in examining a child, regarding it as a reliable sign of neurasthenia. Children who present it usually have other signs of congenital universal asthenia and the manifestations of this are often incorrectly interpreted by physicians. The pallor, weakness and scant appetite are ascribed to tuberculosis, stomach or heart disease, etc., when the trouble is in fact a general constitutional inferiority, both physical and psychic. The nervous threshold is abnormally low, and the functional weakness of the digestive system prevents proper nutrition. The internal secretions are involved also in the congenital asthenia, but its chief features are the asthenia, the low tonicity of the muscles, the false anemia, the low nervous threshold and abnormal readiness to fatigue, and the lack of or very slow response to therapeutic measures. The practical importance of recognizing this tendency lies in the necessity it imposes for general measures. It is useless to treat scoliosis in such a child until the general condition has been improved as a basis to work on. Orthopedists, Sperk remarks, are too apt to look at the spine alone and overlook the rest of the child. Pediatrists do not pay enough attention to developing deformity, he adds; probably because anatomy is studied on the cadaver instead of the living body. School life may affect children with this congenital asthenia as a constant psychic trauma, and the vacations are too short for them to recover from the effects of this. Such children should be guarded against overexertion. The proper application of massage, repose, relaxation, functional gymnastics, air and sunlight and a simple diet are all the means at our disposal, and success depends on utilizing them wisely.

167. **Simple Method of Artificial Respiration.**—Weinländer worked out this method of artificial respiration as a last resort in striving to save a child of 13 who had stopped breathing and lay in stupor from the effects of apoplexy after lumbar puncture to relieve uremia in acute nephritis. (The case was mentioned in these columns, January 17, p. 248, abstract 163.) Artificial respiration aroused the child and the intense cyanosis subsided, but every time the artificial respiration was suspended, the intense cyanosis returned and there was not a trace of spontaneous respiration, but the pulse rose to 110 under the artificial respiration and the child's normal color returned each time. By this means it proved possible to keep the child alive for almost seventeen hours as the artificial respiration was kept up until the heart gave out completely. The method of artificial respiration he worked out is readily seen from the illustration, which shows the extreme expansion of the chest, beyond anything attainable with any other technic, he says, while the chest spontaneously springs back by its own elasticity so that there is no need to compress the chest to promote expiration. Another advantage of the method is that the tongue falls forward out of the way and saliva and mucus drain down on the palate where they can be readily wiped out. The hyperemia of the brain may be a stimulant to the respiration center. No assistance is required, and the person applying the procedure does not become fatigued as his task is merely to grasp the arms and push them toward the external occipital protuberance, pushing downward and inward. This exerts extremely strong traction on the pectoral muscles which in turn drag on the ribs, lifting them up and thus inducing a powerful inspiration. After the arms have thus been pressed against the back of the head as it hangs over the edge of the table, the grasp of the arms is released and the arms swing of themselves down into the position shown in the illustration, at a right angle to the plane of the face and about half a yard from the median line. The muscles have to be entirely relaxed to do this, and consequently this technic is applicable only when the patient is unconscious.

Weinländer's method for artificial respiration.

Zentralblatt für Chirurgie, Leipsic

March 7, XLI, No. 10, pp. 417-464

168 Prevention of Pain after Local Anesthesia. O. Klauber.
169 Traumatic Hernia. G. Schwalbach.
170 Exclusion of the Pylorus. (Zur Frage der Pylorusausschaltung.) E. Polya.

Zentralblatt für Gynäkologie, Leipsic

March 7, XXXVIII, No. 10, pp. 361-392

171 *Extraperitoneal Cesarean Section; Indications and Technic. O. Küstner.

171. **Extraperitoneal Cesarean Section.**—Küstner has performed this operation on 103 women and all recovered after being safely delivered except two; one of whom died from the effect of the anesthetic and the other from tetanus; none from puerperal infection. The method is applied in all cases requiring artificial delivery by cesarean section, regardless of whether there is suspicion of infection or not. Fifty-three of the women were already infected or infection was regarded as highly probable, but only about thirty-three of the women had a febrile recovery. In these cases the membranes had ruptured from two to five days before the operation. Never in any instance was there a suspicion of inflammation of the peritoneum which had been pushed up out of the way before

the uterus was opened, and never was there any sign of a tendency to meteorism. Since this technic has been introduced into the university maternity in his charge (Breslau), only one pubiotomy has been done and only a few supravaginal amputations on account of cancer, while no living child has had to be sacrificed.

He works through an incision 3 or 5 cm. to the left of the linea alba, and parallel to it, carrying the incision from the pelvis up but stopping considerably short of the umbilicus, cutting down to the fascia but working beyond this with blunt dissection, rubber-gloved fingers and pads, to refrain from injuring the peritoneum. Others make the incision in the flank or on the median line, but Küstner has been using this technic since 1908 and states that it renders the bladder more readily accessible while it permits the incision in the cervix more conveniently than through the other incisions. When the peritoneum is exposed the entire length of the incision, it is separated from the bladder by blunt dissection toward the median line and it is then worked up from the deeper regions until the uterus muscle is exposed bare of peritoneum. It is easy to mistake the bladder for the peritoneal fold and the peritoneum must be worked loose until the bare cervix lies unmistakably exposed. When this is once accomplished, it is a simple matter to push the bladder farther over toward the median line and the fold of the peritoneum upward without such extreme care as hitherto required.

As soon as enough of the cervix muscle is exposed to permit an adequate incision it is cut and the child's face is brought up into the opening. A subcutaneous injection of ergot is given before extracting the child, and then he waits. After a few good contractions of the uterus he applies the Credé if the placenta is not spontaneously expelled. The uterus is then sutured in two tiers and the abdominal wall, leaving a gauze wick in the lower corner in every case. As we never can tell beforehand whether the germs already in the cervix are virulent or not, it is safer to manage the case as if they were known to be highly virulent. None of the children died in consequence of the operation. It is always done with the bladder emptied after it has first been filled to locate it. This organ was injured in seven cases, but healed without disturbance in all; the injury occurred from mistaking the bladder for the vesico-uterine pouch. Küstner adds that this method of cesarean section is now applied without discrimination when there is reason to suppose that the child cannot be delivered by the natural route; the question is not raised as to whether the case is an infectious one or not.

Gazzetta degli Ospedali e delle Cliniche, Milan

XXXV, Nos. 25-29, pp. 257-312

172 Stenosis of Uterine Cervix and Nervous Phenomena. (Sul trattamento della stenosi del collo uterino col metodo Pozzi e sui rapporti che intercedono fra le malattie utero-ovariche e le nevrosi.) R. Casali.
173 The Cerebrospinal Fluid in Tuberculous Meningitis. G. D. Lago.
174 Polymorphous Erythema. I. Civalleri.
175 Phosphocarnic Acid in Blood of Animals after Removal of Thyroid and Parathyroids. A. Nizzoli.

Policlinico, Rome

March 1, XXI, No. 9, pp. 297-332

176 *Determination of Indican in the Urine. A. Rossi.

March 8, No. 10, pp. 333-372

177 *Anaphylaxis from Drugs. T. Silvestri.

176. **Test for Indican in the Urine.**—Rossi says that the greenish tint assumed by the urine when it is heated after having been treated with Obermeyer's reagent is a good index of the proportion of indican in it, even before the chloroform has been added. The addition of 2 c.c. of a 10 per cent. alcoholic solution of thymol to the chloroform hastens the response to the test, so that the whole is complete in a few seconds.

177. **Anaphylaxis from Drugs.**—Silvestri states that he has encountered a number of cases in which the disturbances after taking a certain drug can be explained only on the assumption of anaphylaxis. His list includes a case of threatening symptoms after taking atropin (woman of 30); after taking iodin, the idiosyncrasy in this case being inherited by the man's three children; after local contact with iodoform or phenol even in the minutest amounts; after pyramidon and after morphin or after both; after strychnin in one case, and after local application of mercury in one case. The symptoms merely indicate that the drug has acted like a poison in these persons; the peculiarity consists in the rapidity and intensity of the symptoms of poisoning, altogether out of proportion to the dose of the drug. He thinks that true anaphylaxis and an idiosyncrasy to a drug are of the same nature. In each the substance finds already present in the body some substance with which it unites to form a virulent and promptly acting toxin. Both should be warded off and treated on the same principles.

Riforma Medica, Naples

February 28, XXX, No. 9, pp. 225-252

178 Radium Therapy. G. Rummo.
179 *Glycosuria of Renal Origin. (Contributo sperimentale sul significato delle glucosurie dette renali.) A. Ferrannini.
180 Hydroiodic Acid for Sterilization of the Skin. R. Lettieri.

179. **The So-Called Renal Glycosuria.**—Ferrannini has been studying the biologic mechanism of the disturbance in the kidney in this condition, especially from the influence of phlorizin. The glycosuria evidently is the result of qualitative abnormal conditions in the tubular epithelium but the general condition of the organism as a whole is a more potent factor than has hitherto been appreciated. Consequently too much credence must not be placed on the phlorizin test of kidney functioning alone.

Tumori, Rome

February, III, No. 4, pp. 441-568

181 Antigens for Meiostagmin Test for Cancer. G. Izar, C. Patanè and G. di Quattro.
182 Tumor in Hypophysis Region. B. Lunghetti.
183 *Conception and Histogenesis of Endotheliomas. G. Bilancioni and L. T. Cipollone.

183. **Endothelioma.**—A number of colored plates accompany this report of research on the histogenesis of endothelioma as studied in fourteen cases. It closes with ten pages of alphabetically arranged titles of articles on endotheliomas.

Brazil-Medico, Rio de Janeiro

February, XXVIII, No. 7, pp. 61-76

184 *Idiopathic Paroxysmal Hemoglobinuria. U. Paranhos.

184. **Paroxysmal Hemoglobinuria.**—Paranhos relates the case of a boy of 18 whose mother had died of eclampsia and whose one sister has liver disease. Beyond the ordinary children's diseases he had no pathologic past except for slight albuminuria for several years; no malaria. In 1903 he developed hemoglobinuria in consequence of a chilling and again up to six times during following winters. The phenomena observed confirm the assumption that this curious affection is the result of disturbances in the ductless glands, involving the spleen, liver and kidney. The urine during the attacks did not seem to contain blood-cells but merely dissolved hemoglobin; no signs of parasites were found at any time.

Semana Medica, Buenos Aires

January 29, XXI, No. 5, pp. 241-296

185 *Serodiagnosis of Pregnancy. (La suero-reaccion del embarazo Abderhalden.) J. A. Gabastou.
186 Physicians' Remuneration. (Honorarios medicos.) P. B. Aquino.

February 5, No. 6, pp. 297-356

187 Influence of Atropin on Milk-Increasing Action of Hypophysis Extract. R. A. Houssay and C. Maag.
188 Prophylaxis of Industrial Diseases. (Reglamentaciones industriales.) J. M. Obarrio.
189 Demonstration of Identity of Two Finger Prints. H. Welsch and A. Lecha-Marzo.
190 Tuberculosis in Bolivia. N. M. Villazon.

February 12, No. 7, pp. 357-412

191 Vaccine Against Typhoid. (Nueva vacuna contra la fiebre tifoida.) S. Dessy, F. L. Grapiolo and V. Fossati.
192 Echinococcus Abdominal Disease. (Hidatidosis y bacilosis peritoneal.) A. Viton.
193 Work in Treatment of Mental Disease. F. Gorriti.
194 Artificial Creation of Tissues. (Notas de plasmogenia: Preparación de radiolarios; Calcita silícea preparada con sílice coloidal a 40 por ciento.) A. L. Herrera.

185. **Serodiagnosis of Pregnancy.**—Gabastou applied Abderhalden's dialysis technic in 133 cases and obtained a positive response constantly in the 101 pregnant women, but the response was likewise positive in a few non-pregnant persons. He remarks resignedly that the technic was probably to blame in these cases and he urges zealous work to simplify the technic so that it will be less complicated and thus better adapted for general practice.

St. Petersburger medizinische Zeitschrift

February 14, XXXIX, No. 3, pp. 29-44

195 *Tuberculous Lymph-Nodes in the Chest. (Endothorakale Drüsentuberkulose und Lymphozytose.) O. Moritz and P. Mende.

February 28, No. 4, pp. 45-60

196 Intravenous Injection of Phenol in Treatment of Tetanus. M. Joffe.
197 Progress in Military Surgery. (Kriegschirurgie.) O. Holbeck.
198 Fatigue in Light of Research on Immunity. (Die Ermüdung im Lichte der Immunitätsforschung.) W. v. Holst.

195. **Lymphocytosis as Index of Tuberculous Thoracic Lymph-Nodes.**—Moritz confirms Schultz' statement that lymphocytosis seems to be a constant accompaniment of tuberculous processes in the lymph-nodes in the chest and hilus and that it can be increased by injection of a minute dose of tuberculin, but he does not regard this fact as pathognomonic. He has found that the lymphocyte count at different times during a single day may vary up and down to a total range of 12 per cent. even without injection of tuberculin. In his six cases of hilus tuberculosis there was a positive lymphocytosis only in three. He has also had healthy individuals under observation for periods up to ten years who presented more or less pronounced and constant lymphocytosis. Schulz' communication on the subject was summarized in THE JOURNAL, Nov. 25, 1911, lvii, p. 1806. In thirty-two cases of lymph-node or hilus tuberculosis the lymphocytosis increased by 6 up to 24 per cent. after a minute injection of tuberculin. There was only one negative response in the clinically certain cases, and the negative responses when the patients were reexamined several months later, testified to the importance of the lymphocytosis as a sign of an active process.

Russky Vrach, St. Petersburg

January 25, XIII, No. 4, pp. 109-144

199 Modified Technic for Abderhalden's Serodiagnosis. B. Kabanoff.
200 The Influence of Animal Food on the Aorta and Internal Organs of Rabbits. V. K. Varischcheff.
201 Plague. A. D. Pavlovsky. Commenced in No. 2.
202 *Repeated Withdrawal of Small Amounts of Blood in Treatment of Grave Anemic States. A. K. Pedenko. Commenced in No. 3.
203 Etiology and Treatment of Keratoconus. I. I. Tamamsheff.

202. **Repeated Withdrawal of Small Amounts of Blood in Treatment of Grave Anemic States.**—Pedenko reports good results from treatment of pernicious anemia with repeated blood-letting. This method is recommended by him as the last resort, and must be considered together with the rest of the numerous methods as merely symptomatic treatment because the etiology of pernicious anemia is not known. The blood was taken from a vein at the elbow, 50 or 120 c.c.; in some cases the venesection was repeated six times at intervals of ten to seventeen days. He used this method on three patients with the idiopathic form of pernicious anemia; two were temporarily and one permanently improved. The beneficial action of the repeated blood-letting can be explained by its stimulating effect on the blood-making organs, especially the bone-marrow, which then produces an increased amount of blood elements. This opinion is borne out by the fact that in two of Pedenko's patients the spleen became enlarged after repeated blood-letting. The venesections may be of benefit also through removal of the toxins present in great quantities in the blood in pernicious anemia. Pedenko's patients showed marked toxemia, and even one blood-letting led to immediate improvement and subsidence of the manifestations of the toxemia.

Hospitalstidende, Copenhagen

March 4, LVII, No. 9, pp. 257-288

204 Progressive Wasting Away of Fat Tissue. (Lipodystrofia progressiva.) V. Christiansen. Commenced in No. 8.

Hygiea, Stockholm

March, LXXVI, No. 4, pp. 193-255

205 *Dependence of Dentition and Development of the Hair on the Glands with an Internal Secretion. (Dentition, hårutveckling och inre sekretion.) A. Josefson.

205. **Dentition and Growth of Hair under Control of Internal Secretions.**—Josefson presents evidence, clinical and roentgenoscopic, which reaffirms anew the correctness of Woods Hutchinson's recent paraphrase, "We are such stuff as ductless glands are made of, and our little life is rounded by a sheep." Josefson advocates systematic organ therapy during pregnancy in families which manifest a familial tendency to abnormal dentition and growth of hair. Tardy dentition should be regarded as a warning that the development of the body is not progressing as it should, and that the work of the glands with an internal secretion will have to be artificially supplemented to tide the patient along until normal conditions become installed. He does not attribute the trouble to any one gland but to some disturbance in the functional balance of the whole ductless-gland system. Dentition was hastened and regulated by thyroid treatment in a boy of 14 backward in intelligence and physical growth. Numerous anomalies and delayed development were found in the teeth of a woman of 27 with myxedema since puberty. Three children in one family have numerous anomalies in dentition and growth of hair and similar anomalies had been recorded in two preceding generations on the mother's side. Thyroid treatment of one of the children apparently had an important influence in stimulating and regulating the further growth of teeth, genitals and hair.

Norsk Magazin for Lægevidenskaben, Christiania

March, LXXV, No. 3, pp. 241-368

206 Color of Hair and Eyes in Norway. (Øinenes og haarets farve i Norge.) A. Daae.
207 Surgery and Surgeons, Past and Present. P. Bull.
208 *The Blood Picture in the Scrofulous-Tuberculous. J. C. Trumpy.

208. **The Blood Picture in the Scrofulous-Tuberculous.**—Trumpy devotes twenty-five pages to tabulation of the details of the blood picture in 36 children examined from two to ten times; 23 were over 12, 30 over 8 and 32 over 5. He found as a rule that children who have recovered from a tuberculous affection have a morning leukocyte curve under 7,000 with relative lymphocytosis. In those with a recent but still closed tuberculous process with or without a fistula, but without fever, the leukocytes range from 7,000 to 10,000; if there is fever the eosinophils drop off. When there is a fistula accompanied by fever, there is pronounced leukocytosis while the number of eosinophils is very small or there may be none.

Ugeskrift for Læger, Copenhagen

February, 26, LXXVI, No. 9, pp. 377-404

209 *Gonorrhea in the Female. (Gonorroiske Lidelser i de kvindelige Genitalia.) E. Pontoppidan.
210 Typhoid Epidemic Traced to Milk. L. Villadsen.

209. **Gonorrhea in the Female Genital Organs.**—Pontoppidan compares the length of treatment and the outcome in 303 cases of gonorrheal endometritis and fifty-five of mischief in tubes or ovaries. Salpingitis developed in 17.2 per cent. of 157 women with endometritis given intra-uterine treatment, and in 19.18 per cent. of 156 cases in which no local measures were applied to the uterus. The length of treatment was about the same in each group. The intra-uterine measures evidently were not instrumental in spreading the disease to the adnexa; blood-borne involvement seems the general rule. Considerably better results were obtained with hydrochloric acid than with any other local measures. He used a 0.5 per cent. solution of absolute hydrochloric alcohol (*½ pCt. Saltsyreopløsning*) and found it simple and convenient of application so that it is now the main reliance in local treatment of gonorrhea in women, even applying it in the urethra also.